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AN informal notice has been given that the Seventeenth Annual Convention of the American Institute of Architects will be held in Providence and Newport, R. I., on the 29th, 30th and 31st of August next. The time has been set much earlier in the year than usual, in order that visitors may see the two beautiful cities where the Convention is to be held at their most brilliant season. The committee of arrangements have succeeded in devising a most attractive programme of mingled business and pleasure. The first day's session will be held in Providence, the Convention meeting for the usual business in the forenoon, and for adjourned matters and papers in the evening, the time between being occupied by a drive about the city. During the forenoon of the second day the regular business will probably be nearly or quite completed, and the Convention will adjourn to Rocky Point for dinner; proceeding later by steamer to Newport, where an evening session will be held in the picturesque Casino. The third day will be devoted to enjoyment, the members spending the forenoon in driving over the town, to separate finally in the afternoon, after a lunch at the Casino. The committee call upon all members of the Institute to assist in making the meeting of the Convention as interesting and successful as possible, and ask particularly for papers on topics of professional interest. There are so many architects who have within the past year or two experienced or observed something which their fellows would like to know about that it ought to be an easy matter to secure material of great value; but to make sure of this result every member of the Institute should ask himself whether he is not bound to contribute some of the information which he has acquired in return for that which he expects to gain from others.

THE dispute between the master masons of Chicago and the Bricklayers' Union, after even more than the usual amount of ridiculous boasting, recrimination, bad faith and mendacity, has virtually terminated, in an order which "permits" the members of the Union to go to work again at the wages offered them, "provided they refuse to work under the non-Union foremen," the last clause being, of course, nothing more than one of the characteristic pretences by which the self-constituted leaders of such bodies endeavor to deceive people who do not know them into the idea that they possess some authority. The last hours of the strike were enlivened by the confession of a penitent Union man, who came to the house of the Secretary of the Master Masons' Association at midnight, and woke him up to tell him that he had circulated false reports about him to injure his character, and having lost his peace of mind in consequence had come to him in the hope of regaining it by the acknowledgment of his fault. The unsympathizing Secretary told the culprit in reply that it was quite unnecessary for him to waste his time in going about confessing himself to be a liar, since everybody knew that already; and dismissed him without much ceremony. It is much to be hoped that an understanding having been reached, the building trades in Chicago will enter upon a new season of profitable activity.

ANOTHER strike, in Massachusetts, has practically ended in a different, and much less satisfactory way. For some time the operatives in certain shoe manufactories in the town of Marblehead have been engaged in a dispute with their employers, and have used against them the customary practices of intimidating those who were willing to work for the wages which they refused, and threatening and endeavoring to injure those of their fellow workmen who remained faithful to their duty toward their employers and their own families. The operatives control a large number of votes, and the town government, in abject terror of their influence, refused to do anything to protect the employés or property of the manufacturers, who, finding themselves on the verge of ruin, at last resolved to take the only course open to them, and remove their business and their machinery to another State. The transfer is already completed in some cases, and in a few days all the aggrieved manufacturers will be gone, leaving their operatives to seek some other means of living, since they would have it so, as best they can; and the foolish town government to mourn the loss of a goodly portion of its heaviest tax-payers, and to provide betimes for the support of the army of paupers which it has so efficiently helped to create within its jurisdiction.

THE question of the responsibility of architects is likely to be raised in an interesting form in relation to the repairs of the stone ceiling of the Assembly Chamber in the new State Capitol of New York. It will be remembered that a commission appointed to examine and report upon the security of this ceiling, although it found no defect involving imminent danger to the structure, advised its removal; and most of our readers will also remember that the architects of the new part of the building, Messrs. Eidlitz and Richardson, united in the production of a very able reply to the report of the Commission, protesting against the demolition of their work; and in connection with this made an offer, which was accepted, to do at their own expense any work of consolidation or repair which might be necessary to make the ceiling absolutely secure. The cost of the work done in carrying out this proposition was about three thousand dollars, which Messrs. Eidlitz and Richardson paid; but at the subsequent session of the State Legislature a bill was introduced, praying that they might be reimbursed for their outlay. So far as it is now possible to judge, the friends of the architects seem quite justified in asking for them the repayment of money spent rather in deference to an unreasonable panic than in remedying any fault or mistake of their own; but, although both houses of the Legislature passed the bill, it was vetoed by the Governor. It is, of course, probable that the matter will come up again next year, and its discussion may perhaps reopen the whole question of the proper or improper construction of the vault, which has hardly yet been satisfactorily settled.

WE have been favored with a copy of what would be called by some persons an "invitation to architects," announcing, in rather ungrammatical language, that the Commissioners of the Territory of Dakota thereto authorized will on the fifth day of July, 1883, "receive plans and estimates for a capitol building," to cost when completed not more than three hundred thousand dollars, "which said building shall be designed as the main or central part of a larger edifice, and the architect must enclose his bill for the plans independent of superintendence, and also specify the price of superintendence, if employed for that purpose." The Commissioners, as we are subsequently informed, "reserve the right to reject any or all bids, and will only pay for such plans and specifications as are accepted." We should like to know how many architects propose to dance attendance at the session of the high Commissioners of Dakota, with their portfolios under their arms, on these liberal terms. Every one knows that no proposition, however mean and insulting, is regarded by the average public officer as too degrading to be offered to persons who are willing to work for nothing, but it is hardly conceivable that any architect with honest intentions should think of advertising his lack

of employment and low opinion of his own ability by noticing such an announcement.

FOLLOWING the example of the Florentine and Parisian colonies, the group of artists resident in Rome have prepared an earnest protest against the new protective tariff laid upon paintings and sculptures imported into this country, joining with it an appeal for its speedy removal. This action of the Roman residents is perhaps the more significant, inasmuch as Rome was the Mecca of American artists long before the *Salon* or the French school were heard of in this country, and the opinion of those who still cling to the Eternal City may be taken as that of the most conservative portion of our artistic society; but, as it seems, the devotees of high art are as sincere in their abhorrence of this kind of political patronizing as their impressionist brethren north of the Alps. We regret, however, to find them somewhat misinformed as to the direct support which the government of the United States has given to æsthetic culture. In their protest they say that "we, as a nation, have done nothing to foster art, have created no national museum," and so on. Evidently, the authors of this sentence have never visited Washington, where ample sums of public money have been spent in the acquisition, for the adornment of the Capitol, of what those who voted for the appropriations probably supposed to be works of art. One is rather at a loss, in contemplating these creations, to understand the theory on which the estimate of their merit was based, but it is not impossible, considering the sort of assertion which passes current among a certain class of statesmen, that the testimony of their authors on this point was received as convincing.

THE bill incorporating a company for the construction of a canal across Cape Cod in Massachusetts, was passed last week, after a bitter opposition, proceeding, it is said, from the railway companies. Several attempts have already been made toward the excavation of this canal; and, as the inhabitants of that region dryly remark, the route is strewn with empty champagne bottles left by the various parties of engineers; but the last company incorporated for the purpose made itself so ridiculous by the magniloquence of its promises, and the feebleness of its performance, that there has naturally been some hesitation in granting a new charter. As something like fifty thousand vessels pass now in a year around the extremity of Cape Cod, and the number is constantly increasing, the attention of those persons who take a satisfaction in the promotion of great engineering enterprises has been directed more earnestly than ever, since the failure of the last company, to an undertaking which seemed so certain of pecuniary success, and the associates who have advanced so far toward securing their charter are willing, as surety for their good faith, to deposit two hundred thousand dollars in the State Treasury, to be forfeited unless the scheme is carried through within a limited time. In explanation of the hostility of the railroads to the canal, it seems that while the others may be acting from a mere desire to obstruct any rival route for transportation, one, the Old Colony road, extends to the very end of the Cape, and would find its traffic seriously interrupted by a ship canal. Even with the best of drawbridges, the passage of a vessel across the line every six or seven minutes would lead to vexatious delays of trains, if nothing worse.

THE *Sanitary Engineer* appears this month in a somewhat different and improved form, giving, among other things, more importance to the excellent editorials which have always distinguished it. One of these articles in the first number for the month treats of the curious investigation now in progress in relation to the conduct of the Government Architect, and expresses the decided opinion that the public work should not "be interfered with, and the Departments demoralized, for the gratification of cranks and soreheads." In its opinion the investigation is, in part at least, carried on for the benefit, and at the expense, of disappointed contractors, who hope to gratify their resentment, if nothing else, by using a politician desirous of notoriety as a cat's-paw. This theory is certainly in some degree justified by the character of the evidence hitherto brought forward; and the animus of a few of the interested persons is illustrated by a letter from a manufacturer of elevators in Chicago, evidently written for publication, in which the Supervising Architect is accused of improper favoritism in refusing to invite this particular manufacturer to compete with others for furnishing elevators for the public buildings which have been erected under his care. We know nothing against the elevators made by the writer of the letter, but it is at least conceivable that the Supervising Architect may have refrained from asking him to compete because he did not approve of something in the design or construction of the machine; and it would be hard indeed if the officer responsible for our public buildings should be obliged to use anything in the shape of an elevator that might be offered him, if it only proved to be the cheapest in price.

A NOVEL case in real-estate law is reported from Indiana, where a vigorous widow, in running the boundaries of her property, found her calculations in disagreement with those of her next-door neighbors, who happened, technically, to be the trustees of a certain church. The discrepancy between the opposing estimates of lines or angles was so serious that by the lady's plan her boundary not only overran the church land, but came into collision with the church edifice itself. Being quite certain of the correctness of her own survey, and rightly judging that she was entitled to the occupancy of the whole of her estate, without regard to the encroachments which others might have unadvisedly made upon it, she proceeded to erect a fence upon the division line as she understood it, breaking all the church windows in order to obtain an accurate alignment. It happened, however, that the church trustees were equally convinced of the correctness of their plan, which represented their boundary as running on quite a different line, at some distance within the territory which the widow claimed as her own, and they too resolved to erect a fence on the boundary as they understood it. Unfortunately, the lady's convictions were stronger than theirs, or, at least, took a more active form, for no sooner had one of them appeared on the ground with his fence-building materials than he was assailed with a horse-whip wielded by the fair hands of the adverse claimant, and ignominiously beaten to the ground, together with his fence. At this point the aid of the law was invoked, to procure a cessation of hostilities while impartial justice should weigh in her balance the opposing claims; but no sooner was the sword of the blind goddess extended, in the shape of a policeman with a pistol, toward the scene of conflict, than the conquering heroine made a new charge, and after knocking the pistol from the policeman's hands, set two fierce dogs on him, who bit him in a most pitiable manner. After this, the hope of an amicable settlement seems, not without reason, to have been abandoned, and the machinery of the State courts has been set in motion to arbitrate between the belligerents.

IT seems that the project entertained in England for excavating a second canal across the Isthmus of Suez is likely to be forestalled by the managers of the present canal, who announce that they are on the point of constructing a duplicate of their own work. The territory already in their possession is large enough to admit of another canal parallel with the first, but they think it advisable, if possible, to obtain farther concessions of land from the Egyptian Government, and have already entered into negotiations for that purpose. It seems hardly likely that representations of this kind should have been made with no other purpose than that of breaking up the independent English scheme, and if M. de Lesseps and his associates should really intend to dig a second canal, they can probably do so to better advantage, and at less expense, than any one else.

ON the occasion of the Montgolfier celebration in France this summer an aëronautic exhibition is to be held in Paris, in the palace of the Trocadéro, to open on the fifth of June, and continue ten days. The exhibition is to comprise all kinds of materials used in the construction of balloons, such as cotton and silk fabrics, cords for nettings, bamboo for baskets, and so on; with balloons and parachutes, shown by models and drawings, as well as in the full size; scientific instruments for use in aërial voyages, including barometers, hygrometers and photographic apparatus; and apparatus for generating hydrogen and other light gases. In the last item of aëronautic practice, particularly, great improvements have recently been made, and persons interested in the subject will probably be able to learn much from the exhibition.

FROM BAYREUTH TO RATISBON. — NOTES OF A HASTY TRIP. — VII.

IS may be imagined from the description already given, the chief interest of Rothenburg for the architect, as for all others, lies in its general aspect. That is to say, while there are many fine or curious structures in the place they are equalled or surpassed by others of similar sorts in many other places; but in its general appearance Rothenburg is quite unique in the long list of German cities. Yet it is not to be supposed that we see here quite what we would have seen had Nuremberg, for example, come down to us in as unaltered a condition. Important though Rothenburg was in early days, standing though it did at one time next to Nuremberg in influence among the Franconian towns, it never was so large or so magnificent a city by many degrees. It acquired by force of arms or of money the dominion over numerous neighboring towns and villages and a wide stretch of fertile country. It ruled over some 20,000 souls, but even at the time of its greatest prosperity, toward the end of the fourteenth century, there were never more than 6,000 within its walls. Its burghers built on a sufficiently lavish and imposing scale, yet they did not realize the sumptuous beauty of Nuremberg, nor was Rothenburg ever, like Würzburg, the seat of powerful art-loving prelates, having been, indeed, a centre of Protestantism from the very first. It must have been, however, architecturally considered, one of the finest towns of the second class in Southern Germany, and this is enough to make us very grateful for its preservation in such peculiarly untouched condition down to our own time. As I have said, nowhere else save in the background of some old German print will the student of today gain so good an idea of how a fortified town looked in olden days as he can gain by looking at the west or valley side of Rothenburg. The back windows of our little hotel, *Zum Goldenen Hirsch*, looked right out over the western wall, and the view was one of the most exquisite as well as one of the most interesting I have ever seen, nature no less than man bringing elements of peculiar beauty to its composition. To right and left the wall with its toppling houses and turrets swept out in a wide curve; immediately below stretched the steep slope of the cliff planted with vines and gardens; at its foot, with the rolling hills beyond, was the rushing little stream spanned, toward the left, by the quaint old bridge, while the lovely church of Cobozell beside it formed a centre that could not have been more happily designed. No one should see Rothenburg in winter, for half its charm lies in its peculiar situation — which to the mediæval imagination always suggested that of Jerusalem — and in the beauty of the landscape by which it is encircled.

But when the wonderful general effect has been sufficiently studied and one's attention is turned to details there is still very much of the greatest interest to be found. Well within the present boundaries of the town many of the streets are spanned by gateways surmounted by massive towers. These mark the line of an early wall and were allowed to remain when the city had grown to such an extent that a new wall, the one still so largely preserved, was a necessity. This, which was also furnished with many gateways, has been partly removed toward the east and a portion of it was blown down by a storm some years ago; but perhaps three-fourths of its entire extent still stands, and the old moat still runs along a great part of its base. The towers are of the most manifold shapes, often surmounted with the quaintest curving roofs. It is usually impossible to say when the oldest portions of them may have been built, so oddly have they been patched and altered and restored at a dozen different times; but distinct relics of Romanesque work are often visible. This is the only place I have ever seen, by the way, where not only do the old city gateways stand, but some of the gates themselves still hang upon their hinges, though no longer closed at night. Romanesque relics of other sorts may be found by the diligent student, but most of the existing buildings date from late Gothic and from Renaissance days. It is due to the Bavarian vandals of whom I have already spoken that earlier remains are not more numerous. The chapel in the Burg is now in ruins but its interior is said to present interesting early Romanesque features. We were, however, unable to gain admittance.

In the streets which border and lead out from the beautiful market-place are many fine large dwelling-houses similar to the splendid Renaissance patrician homes of Nuremberg; but the rest of the town is chiefly made up of comparatively small and low dwellings, a story and a half or two stories in height. Many of them are undoubtedly very old though their simple construction does not lend itself to the fixing of dates. Some of them front the street, others stand with their gable end thereto. Most of them have been painted or color-washed at various times so that their heavy half-timbered construction is only now and then discernible beneath the coating; but fortunately actual white-washing has not been common. Usually a wash of a delicate tint — very pale pink or yellow or green or lavender — was chosen instead of white and is now weather-worn to a delightfully soft and mellow tone. It is not easy to imagine how fortunate an effect, pictorially considered, this sort of coloring, when subdued by time, can give to one of these old-time streets. Those of my readers who have been to Augsburg, where a similar fashion has been followed, will understand that this painting, though probably not given with any more definite artistic intention than that which inspires our own farmers when they use white and grass green, has yet been a very happy accident.

The market-place which occupies almost the centre of the town, is large and most imposing. Many beautiful houses front upon it and from it runs toward the west the wide Herrenstrasse containing others of equal importance; but the chief feature of the square is the Rath-Haus, which is admirably placed on rather steeply rising ground on the western side. A picturesque old Gothic building was partially removed to give place for alterations in the sixteenth century; but much of it still stands with a fine façade on the Herrenstrasse and a most picturesque tall tower. The newer portion facing the square is one of the finest civic structures which the Renaissance gave to Germany, — many stories with an octagonal staircase-turret rising through the whole elevation in the centre, and smaller turrets at either end. Along the front runs a splendid open portico built in the Italian *Rustica* style surmounted by a flat roof (forming a balcony to the second story) which is edged by a beautiful balustrade. The newer combines singularly well with the older Gothic portions, and together they make a group which for architectural as well as pictorial effect can not easily be over-praised.[1] Entering the newer portion by the central door we find a beautiful circular stairway, built round an open well. This, which occupies the turret already noted, takes us in the second story into a large vestibule, divided by columns only from a still larger hall. This is decorated by wall arcades with Tuscan pilasters and has a fine timber ceiling. Then through smaller apartments we reach the immense hall which forms a part of the older Gothic structure. Here was the scene of Tilly's famous wager with the burghers and of many another thrilling or picturesque incident in Rothenburg's history.

The Renaissance came late to Rothenburg, which had been greatly prostrated by the revenge taken by its conquerors for its sympathy with the peasants in their revolt. The impulse seems to have come from Nuremberg, since builders from this city are credited with most of the finer structures. A certain Wolff of Nuremberg built this Rath-Haus in 1572 and also the Gymnasium,—smaller but quite similar in style, also with a beautiful octagonal staircase-turret — and the group of hospital buildings at the southern end of the town.

One or two of the houses of this period are worthy to be compared with the best in Nuremberg, especially the one called *Geiselbrecht'sches* or the "House of the Mason" — perhaps of this same Wolff. It is entirely of stone with a high, stepped gable toward the street and with curious figures serving as consoles between the windows of the two principal stories. But the chief charm of these Rothenburg houses is in their interiors and court-yards — still quite unaltered though sometimes more or less decayed. The court-yards with their profusion of wood-carvings are most picturesque as well as most artistic. We only had time to glance into one or two, but the portfolio of every painter who has been to Rothenburg will reveal their attractions. And owing to the shortness of our visit we did not have time to give any more attention to the many interiors which are easily accessible to strangers. The houses are said to be peculiarly well arranged and their staircases are always a prominent feature. But we *did* take a moment to visit the beautiful room in the Haffner'sches Haus on the Herrenstrasse which is one of the chief sights of the town, though the building is occupied by a private citizen. It is entirely finished in wood and is in almost perfect preservation, only one panel being missing. Small Ionic pilasters, finely carved, support a false arcade around the walls and the intervals are filled with delicate inlaid ornamentation in different colored woods. The ceiling is later in date and is coarse and unattractive in comparison. It is a wonder the room has not long ago been stripped of its woodwork for the adornment of some connoisseur's dwelling. Perhaps the fact that Rothenburg, although known to artists, has never yet — as I have said — been visited by the wealthy tourist, may explain how this room has remained so long intact while so many less splendid examples of decoration have been carried from their homes. It would be vandalism to suggest the removal of any objects which form an integral part of a city's outward dress or of the decoration of any public building; but I may be pardoned, perhaps, for saying that one would hardly regret it if these lovely panellings should some day be secured for a transatlantic home or — what would be still better, and what they well deserve — for a transatlantic museum.

It is a suggestive fact that ecclesiastical buildings of the Renaissance period, while they are common in Catholic towns, are much more uncommon in places where the Reformation obtained an early hold. With the advent of the new doctrines the old churches were often, alas! purged of their popish ornaments and reduced to a dull

[1] In Volume IV of this journal will be found a large view of the Rath-Haus at Rothenburg from the pencil of Mr. Ispen; and he has at other times, I think, contributed other sketches of the town, to which my readers are referred.

level of whitewash and nudity; but they were not altered and filled with work of an alien character, as they were when they remained in Catholic hands through the seventeenth and eighteenth centuries, and they seem to have answered all the needs of their owners for many a day. We can hardly say that the Protestant towns felt less interest in religion than their Catholic neighbors, but that interest did not seem to show itself in building. Here in Rothenburg we have an example. The great civic buildings date from Renaissance days but all the churches are anterior in time.

The oldest churches seem to have been the little *Burg Capelle* already referred to, and the "Chapel of the Holy Blood," containing a precious relic which made Rothenburg a favorite resort of pilgrims all through the Middle Ages. In the fourteenth century it was proposed to build a larger church on the site of this latter, and the result was the present St. Jacob's — the most prominent feature of the city. A curious story is told of how funds were collected for its erection. In 1336 it was ordained by the council that every citizen should contribute one *heller* — the smallest of possible coins — toward the building fund and that at every funeral a donation should be made. Small as these contributions individually were, by the year 1373 enough money had been collected to begin the work, which was not entirely completed, however, until the following century — the main portion in 1436 and the western choir in the latter part of the century. The church stands on a small square not far from the market-place, opposite it being the gymnasium. For a German church it is very high in proportion to its breadth; its towers are equal in size but not alike in design, and it has other peculiarities which make it even more individual. As is well known, German builders were always noted for adapting their design to the nature of their site and thinking no problem offered by the latter impossible of artistic solution. So we find that the builders of this church, when a street interfered with their work, did not close it up but calmly bridged it over, letting it run through in a sort of a tunnel underneath the western end of the building. From the outside the church with both its choirs appears as a whole, merely cut through by this tunnel; but inside we see that it makes a real division in the structure: the nave and the eastern choir compose the church, and one does not perceive that the organ in its loft at the west end is really standing on the top of the tunnel. There is no communication inside between the nave and the western apse, in the lower story of which last is situated the famous old Chapel of the Holy Blood — now used as a little museum wherein many curious and ancient pieces of sculpture are preserved.

The interior of the church is very interesting to the architect, though it has not a particle of *pictorial* charm to-day, since it has been carefully whitewashed and furnished with some very hideous modern glass windows; but it contains some beautiful carved wooden altars of early date. The Franciscan Church on the Herrenstrasse is older — the nave having been built toward the end of the thirteenth century and the choir about 1360. It is an interesting three-aisled structure without transepts. The nave has a flat ceiling, the choir a vault supported by brackets, the pillars being without capitals. Curious points about the building are that the choir is so enclosed by chapels as to be almost shut off from the nave — a device to secure privacy for the brothers when at service — and that the small clerestory windows of the main portion are square-headed.

The hospital buildings at the southern end of the town offer many interesting features — none more charming than a quaint little one-storied square structure in the centre of the great court-yard, with a high tent-like roof, which has probably been painted many dozens of times by the wandering fraternity of artists. Here indeed, is the quarter of the town where the artists most do congregate; for near the hospital is the old *Spital Thor* or "Hospital Gate," one of the most picturesque in the town, though one of the latest, having been built in the sixteenth century. Near it we see a long stretch of the inside of the city wall, with a curious covered gallery for promenaders, and a most picturesque group of battered old dwellings. Through it from the outside one gets a wonderful glimpse of the town, while as we pass beneath it and look outward we see two roads, one running out along the edge of the flat table-land, the other winding steeply down into the valley, with the bridge and the little Gothic church of Cobozell as its termination. So it is not wonderful that the easels upon which one comes at almost every corner in Rothenburg should in this vicinity be especially numerous.

But it is impossible to name all the buildings in Rothenburg that have points of interest, or to suggest the riches of the country round about for those who care to look for good things in quiet corners. We had no time to do more than survey the immediate environs of the town. The Cobozell church is extremely lovely, though very simple, without any spire save the delicate little appendage which the Germans call a *Dachreiter* on its western gable; with very good tracery in the windows; and, we were told, with a particularly beautiful circular staircase inside. But this last we were unable to see, since after many efforts and much scouring of the neighborhood, we were foiled in our attempt to find a certain old woman who keeps the key and is supposed to sit in the weed-grown church-yard and wait for visitors.

A mile or so northwest of Rothenburg down a beautiful sloping road takes one to the tiny village of Detwang — if that can be called a village which is no more than two or three houses and a mite of an old church. Yet this was once the mother church of Rothenburg — an older foundation than any within the town itself. The American artist to whom I have already referred told me that a few years ago the little structure was still intact and was one of the most picturesque bits that could be imagined. Since then it has been furbished up and whitewashed, but its architectural interest is still great, for it is Romanesque of a very early time and, though simple, of a very charming sort. Indeed, nothing is more charming in any age than one of these early German Romanesque double windows with its mid-wall shaft, never seen, I think, in Norman work, though present in the Saxon relics of England. One such tiny double window is enough to give grace and beauty to a façade of such small dimensions as this at Detwang. Inside the church is an elaborate wooden altar of late Gothic date — if not carved by Riemenschneider then by some one who was his equal.

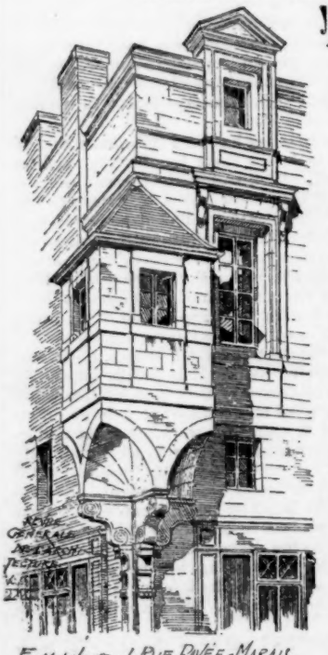
I must not forget to give a word to the many fountains of Rothenburg, especially the large one near the Rath-Haus, with its delicate strap-work Renaissance decoration; nor to the iron-work which is as profuse as it is beautiful. Among the most splendid specimens of the blacksmith's art I ever remember to have seen were two window-screens in the ground-floor of a house on the *Herrenstrasse*, nearly opposite the Franciscan Church. They were the great bowed things giving place for a window-seat within them outside the sill, which are common in the eighteenth century, and were a marvellous example of the most florid yet most graceful and artistic *Rococo* style.

Fifteen years ago Rothenburg must have been very rich in bric-à-brac and it may seem strange to hear that it is not easy to find any there to-day. Probably the artists captured at infinitesimal prices all that was visible on their first advent, and they were followed by dealers from other places who had heard the tales they told. The place is still too unsophisticated for the establishment of bric-à-brac shops and the manufacture or importation of their contents. I do not doubt that many good things — especially in the way of old pewter, in which the town was once peculiarly rich — may still be obtained if one has the time to rummage among the closets of private citizens; but the only place we could hit upon that seemed likely to yield us anything was a very small, very crowded, and very dirty pawn-broker's shop; its contents were chiefly the cast-off clothes of the Rothenburg population, but we did succeed in getting some odd bits of silver and pottery.

I have passed the limits of editorial toleration, I fear, in my rambling account of Rothenburg, yet I feel as though I had but just begun to speak about it. I may only add that looking back upon a peculiarly well-spent life — well-spent, that is, as regards my own pleasure — I find many a red-letter day to rejoice over in retrospect; but among them all there is not one, perhaps, which rivals the August day I spent in Rothenburg — going thither half reluctantly, lest after all I had heard I should be grievously disappointed, but coming away with the feeling that for once reality was as good as imagination — feeling, indeed, that the half had not been told me.

M. G. van Rensselaer.

PREVENTION OF FIRES.[1] — I.



THE following report of the Committee of the Society of Arts was lately discussed: —

The information already available to the public on the subject of fires in theatres is so extensive that the Committee find themselves able to add very little to it. The subject was inquired into by a Select Committee in 1866, and again in 1876 and 1877. On both occasions a large amount of evidence was taken, and the information regarding the condition of the London theatres at that date is as full as need be desired. Much available information is also contained in the Annual Reports of Captain Shaw, the chief officer of the Metropolitan Fire Brigade, to the Metropolitan Board of Works, and also in a pamphlet published by the same gentleman on "The Prevention of Fires in Theatres." Captain Shaw has also recently made special reports to the Metropolitan Board of Works, on the condition of all the London theatres. These reports, except that on the Gaiety Theatre, which has been printed by Mr. Hollingshead, have not been published; but the Committee are

[1] From the Journal of the *Society of Arts*.

given to understand that they are of a very full and exhaustive nature. The committee cannot but think that the public circulation of the information they contain would be attended by beneficial results, even though some of it should place particular theatres in an unfavorable light. If it be a fact that any theatre is in a dangerous state, the public ought to be informed. Supposing any serious accident to occur in such a house, there can be no doubt that a very grave responsibility would fall on the shoulders of those who have kept back the knowledge which might have saved valuable lives.

The Society has itself dealt with the question, so far as water-supply is concerned. In 1875, a committee reported on the means of protecting the metropolis from conflagrations, and in 1877, a second report was issued by the same committee, on fires in theatres. At the present time, the Committee acting upon the information at their disposal, have thought it well to prepare a series of suggestions, which may be taken as representing the opinions of those best qualified to judge, as to the points which should be attended to in the construction and management of a theatre, with reference to the protection of the public from loss of life by fire, or from the even more serious loss of life which would certainly occur from panic caused by the breaking out of a fire, however small its extent.

How these suggestions should be put into actual practice is a point with which the Committee have not dealt. The question of the licensing, inspection, and general regulation of the theatres, not only in London, but in the provinces, is so large a one that they have considered it wiser for them to keep to one special portion of the subject. It may be sufficient to note that the theatres within the metropolitan boroughs, and defined in the Act of 1832, are, with the exception of the two old patent theatres, Drury Lane and Covent Garden, under the jurisdiction of the Lord Chamberlain. These theatres are annually licensed by him, and the license can be revoked in extreme cases, but there is no power to suspend a license for a time, or to inflict any penalties less than the suspension of the license. The Lord Chamberlain issues regulations for the management of the theatres, and once a year an inspection is made. It is believed that these regulations are fairly well attended to, at all events when the period for inspection approaches, but whether they are attended to or not seems to depend principally upon the good feeling of the managers of the theatres. Theatres, in common with all places of public entertainment, come under special provisions in the Metropolitan Buildings Act. These provisions require that the floors and passages, stairs, etc., should be of fire-proof material, and carried by fire-proof supports; also that the whole of the building should be constructed in such a manner as may be approved by the district Surveyor, or, in case of disagreement, by the Board. It is under this act that the Board directed the recent inspection of theatres by Captain Shaw.

The Committee are much indebted to the Secretary of State for Foreign Affairs, who has been good enough to procure for their use copies of the regulations in force in Belgium, in Berlin, and in Vienna. Summaries of these regulations will be published hereafter as appendices to the report. Another appendix contains an account of the researches which have been made, with a view of discovering some material which might be applied to fabrics and to combustible materials, generally with a view of preventing them from taking fire. For the account of these researches they are indebted to one of their number, Sir Frederick Abel. The points which, in the opinion of the Committee, should be attended to in the construction, etc., of theatres, may be classified as follows: —

a. Structural (including arrangements for heating, and with special reference to exits).

b. Arrangement and treatment of scenery and accessories.

c. Arrangement of illuminating appliances and stage effects involving the use of gas, pyrotechnic compositions, etc.

d. Regulation, organization of fire-brigades, etc.

(*a*). *Structural.* — These are certainly the most important of all. First, the building itself should be constructed in a manner calculated to check the spread of a fire. To this end it should be divided as much as possible by fire-proof partitions, and above all there should be a division between the stage and the auditorium, extending from the base to the roof. The opening from the stage in this partition should be defended by a metal screen, or a fire-proof curtain of some sort, though it appears from the experience of the fire at the Berlin National Theatre that the iron curtain actually tore down part of the wall, so that this means of protection has its objectionable features. Perhaps the curtain devised by Captain Shaw, which can, in a very few minutes, be saturated with water, would be effective to this end. There should be an ample water-supply, either by reservoirs at sufficient height, or by connection with the street-supply — the latter for preference. Hydrants and other proper fittings should be provided in abundance. The Committee have had a favorable account of the action, in some warehouses in America, of an arrangement for deluging any part of a building by a shower of water from fixed perforated pipes. They, however, have no information as to whether this arrangement has been used for theatres, and can offer no opinion from their own knowledge upon its merits. Means should be provided for carrying off smoke and heated air, in case of a fire breaking out on the stage or amongst the scenery, so that they may pass away, instead of being, as would now nearly always be the case, drawn into the body of the theatre by draughts usually existing. It is desirable that a theatre should be, as far as possible, separated from adjoining buildings, especially from buildings in which any trade or business is carried on likely to lead to fires. The same provision is also of importance with regard to exits, it being of the greatest consequence that a theatre should discharge its audience into more than one street, even, if possible, into more than two. The different parts of the theatre should have different exits leading right out to the street, exits bringing streams of persons together being specially dangerous. Such exits should increase in width outwards, and should be free from interruption or impediment of any character. Steps in passages, either ascending or descending, should be avoided, and other obstructions likely to cause people to fall. All doors should open outwards. Staircases should be properly fitted on both sides with hand-rails. As regards heating, it does not appear that special arrangements are generally adopted for heating theatres, except by means of ordinary fire-grates in refreshment-rooms, lobbies, etc. Should the electric-light come into general use for lighting theatres, it is possible that they will require to be specially warmed, in which case the usual precautions will have to be employed.

(*b.*) *Arrangement and Treatment of Scenery and Accessories.*— As regards the scenery and the lighter sort of costumes, there seems to be no doubt that measures ought to be taken to render these uninflammable, or at all events, not easily inflammable. For fabrics the best material seems to be tungstate of soda, and this has been successfully employed in some theatres. Mr. Henderson, at that time the proprietor of the Criterion Theatre, giving evidence before the House of Commons Committee of 1877, said that he used it, and that there was no difficulty in its use as regards new scenery; to old scenery, he said, it could not be applied. There appears to be no reason why the woodwork of scenery should not be treated with silicate of soda, either with or without a lime-wash, after the method described in the appendix.

The Committee are not aware whether this actual process has been applied; they would be glad to know that experiments in this direction had been made, but they are informed that the scenery of some London theatres is now treated with some of the more recently invented preparations, most of which, it is understood, have a silicate or a borate for their basis. The effect of all such preparations is that it coats the articles, or, in case of fabrics, the fibres of the articles, with a non-inflammable substance. This does not prevent the evolution of gas from the material when sufficient heat is applied, and the gas thus evolved takes fire and burns. When the source of external heat is removed no more gas is evolved, and combustion ceases. Thus it may be said that the article will burn when exposed to sufficient heat, but has not, in itself, the power of supporting combustion. One effect of this is that it is very much more difficult to set such materials on fire, and this alone is sufficient either to prevent the breaking out of fire at all, or to render it much easier to deal with after it has broken out.

(*c.*) *Arrangement of Illuminating Appliances, and of Stage Effects involving the use of Gas, Pyrotechnic Compositions, etc.*— There is not much to be said about the ordinary lighting arrangements. In all theatres they are generally under the control of a special gas-man. It is desirable that precautions should be taken for the ventilation of places in which the meters are fixed, generally underground cellars, to avoid the risks of explosions.

When electrical illumination is employed, the necessary precautions should of course be taken; in fact, the rules laid down by the Society of Telegraph Engineers apply equally well to theatres as to other buildings. Whatever system of illumination may be employed, whether gas or electricity, it is absolutely necessary that oil or candle lamps should be fixed up in the passages, and near the doors, so that, in the case of the failure of the ordinary lighting arrangements, the audience may not be left in the dark. This is now done in many theatres, and ought to be done in all. Curiously enough, it has happened that these lamps have proved a source of danger, as a theatre in Hungary is reported to have been burnt by one of these "alternative" lamps.

The lighting arrangements for the stage are often very dangerous. The rules which now exist as to the use of naked lights upon the stage ought to be strictly adhered to. All lights should be, and in many theatres are, carefully protected; the footlights should have a grate before them; the wooden battens over the stage, carrying rows of gas-lights, should never be allowed.

Small accidents have, it is understood, not unfrequently occurred from the careless use of the oxy-hydrogen light. This light, when carefully employed, is perfectly safe, but in the hands of careless or inexperienced persons it is liable to give rise to explosions of a dangerous character. The causes of many of the explosions which have occurred, not only in theatres, but during other exhibitions where the light has been used, have not always been traced, but probably in many cases they are due to the gases having become mixed in one of the bags. A bag in which a little hydrogen remained may have been, by mistake, filled with oxygen, and thus a mixed gas of a very explosive character produced. Another source of these explosions is sudden alteration of pressure upon the bags, by which the mixed gases are drawn back into one of the bags, when a similar result occurs. It would be well if the very simple device were employed of storing the gases, when the ordinary coal-gas mains are not employed, or the oxygen gas when they are, in proper gas-holders outside the walls of the theatre, and laying the gas or gases on in the same way as ordinary illuminating gas is laid on.

The use of pyrotechnic compositions is a common source of danger, and it is believed that many of the most serious fires are due to them. Portions of the material are left about after the conclusion of the performance, become ignited, and the result is a fire. Some of these

compositions have, moreover, been proved to be capable of spontaneous ignition. Wherever these materials are used — and it would probably be useless to attempt to stop their use—the greatest precautions ought to be taken. In some places burning houses have been introduced on the stage. This is certainly a most dangerous practice, and might well be forbidden.

(*d.*) *Regulations, Organization, etc.*— There appears to be a good deal of doubt whether it is best to leave the arrangement for the detection and extinction of fire in the hands of the regular employés of the theatre, or to have special firemen for the purpose. The report of the 1877 Committee was in favor of the former system, but the latter seems to be coming generally into use. At most of the chief theatres of London, one or more trained firemen, generally old members of the fire-brigade, are employed. Mr. Ponsonby Fane quoted a remark to the effect that the best prevention of a fire in a theatre was the carpenter's cap, because, directly the carpenter saw a fire beginning he took his cap off and knocked it out.

All the employés ought to be trained how to act in case of fire, inasmuch as on their presence of mind must obviously depend the safety of the audience. They are familiar with the locality, and they are of course accustomed to dealing with crowds of people. Strict regulations ought to be enforced, with the view of preventing the common practice of filling up gangways with chairs, which in the case of panic, would form really serious obstacles to the escaping crowd.

How the regulations for the safety of theatres should be enforced is a question with which, as stated at the commencement of the report, the Committee do not propose to deal; nor are they prepared to offer any opinion as to the amount of inspection which would be desirable, or as to how far managers should be made responsible, and the carrying out of the regulations left to them. It appears to be the general opinion amongst those best qualified to judge that the strict regulations—for instance, in the French theatres—are by no means productive of good. Mr. Hollingshead, in his evidence before the 1877 Committee spoke rather strongly on this point, and gave evidence to show the bad working of the rules. According to him, the responsibility was so much divided between the director of the theatre and the *sappeurs-pompiers*, that there was even more liability to fire than in English theatres. He gave an instance of interference in the arrangements of a piece he had sold to the Porte St. Martin, in which the police would not allow the scenery to be set up or lighted properly, and the result was that the whole tumbled down, and caused a panic amongst the audience, by scattering an enormous number of splinters of glass about. At all events, it is a remarkable fact, somewhat bearing upon this portion of the report, that according to a statement in the 1877 Report, not a single life had been lost by fire amongst theatrical audiences for fifty years preceding, and the same statement might, it is believed, be made at the present time. Many, however, have been lost by panics in theatres during the same period, and this certainly goes to show that precautions against panics should be even more carefully taken than precautions against actual fire.

In concluding the report, the Committee wish to draw attention to a proposal recently brought before the Society by Mr. Cornelius Walford in his paper read on the 28th of February, last, upon "Loss of Life and Property by Fire" — the proposal that an inquest should be held in cases of house burning when there had been no loss of life. The suggestion appears to have been first made in the year 1845, by Mr. Sergeant Payne, then coroner for London and Southwark. It has since been brought forward by his son, Mr. W. J. Payne, the present coroner for Southwark; and the letter which Mr. Payne, in 1873, addressed to the *Times* on this subject was reprinted in the *Journal* which contained Mr. Walford's paper. For a short time the plan was actually put in execution by Sergeant Payne, who, on receiving information that a house had been burnt, granted a warrant for a jury and witnesses in the same way as in the case of an inquest when death occurs; but the system was put an end to by a decision of the Court of Queen's Bench. Such inquiries might be made either by the coroner, or by a special officer appointed for the purpose, and, if necessary, they might be only made in cases when the Chief Officer of the Fire Brigade reported that the case was one that required investigation. The Committee, however, content themselves with drawing attention to the question, without suggesting a scheme by which it might be carried into effect, and they would only remark that a precedent for such inquiries is found in the case of collisions at sea, and in railway accidents, since in both cases inquiries are carried on by the Board of Trade, even though there may have been no actual loss of life.

THE ILLUSTRATIONS.

SEABRIGHT STORES, SEABRIGHT, N. J. MR. H. EDWARDS–FICKEN, ARCHITECT, NEW YORK.

THIS block comprises eight stores on the ground-floor, with a small sleeping room in the rear of each store, and seventeen rooms over, which are used in connection with the Seabright Inn across the way. The stores average sixteen feet by fourteen feet, and are rented as branch establishments of New York business houses catering to the summer residents of the place. The local post-office is in one of the corner stores. The rooms in the rear of the stores have each a sink and provision for a stove. The rooms over are rented in suites, with a private hall to each suite. Housemaid's sinks are provided outside on the gallery at each end of the building, enclosed with lattice-work screens. Second story outside is shingled. Electric bell communication to the Inn opposite renders service between the buildings very easy.

PARTS OF A COUNTRY HOUSE. MR. OLIVER C. SMITH, ARCHITECT, ALLEGHENY, PA.

STABLE FOR A. T. ATHERTON, ESQ., LOWELL, MASS. MESSRS. MERRILL & CUTLER, ARCHITECTS, LOWELL, MASS.

BENEDIKTINER ABTEIKIRCHE ZU LAACH. MEASURED AND DRAWN BY MR. FRANK ZIMMERMANN, NEW YORK, N. Y.

OF this Henry II is considered the founder; he, with the permission and sanction of the archbishop Engelbert of Trier, in the year 1093, laid the corner-stone. After many interruptions caused by wars and the death of several protectors of the church, it was finally dedicated in the year 1156, by the archbishop Hillin of Trier. The church has a double choir, one to the west, the other to the east. The rich architectural work of these steeples is said to date back to the middle of the twelfth century. Since the early part of the nineteenth century the church has been in a state of decay.

SKILES & LINDLEY BLOCK, MINNEAPOLIS, MINN. MESSRS. WILSON & KIMBALL, ARCHITECTS, MINNEAPOLIS, MINN.

THIS building fronts on Nicollet Avenue, 100′ x 165′, on the corner of Seventh Street. There are eight stores and seventy-five offices. Access is had to the several floors by elevator and two stairways. Material used is brick with terra-cotta courses, and a large *cove* terra-cotta cornice.

THE MECHANIC'S HOUSE COMPETITION.

THE jury has awarded the three equal prizes of fifty dollars each to the authors of the following designs:

"*Minimum*" (Mr. J. S. Trowbridge.)
"*Sweete Simplicite*" (Mr. A. C. Schweinfurth, Boston, Mass.)
"*Broome Street*" (Mr. W. B. Mowbray, New York, N. Y.)

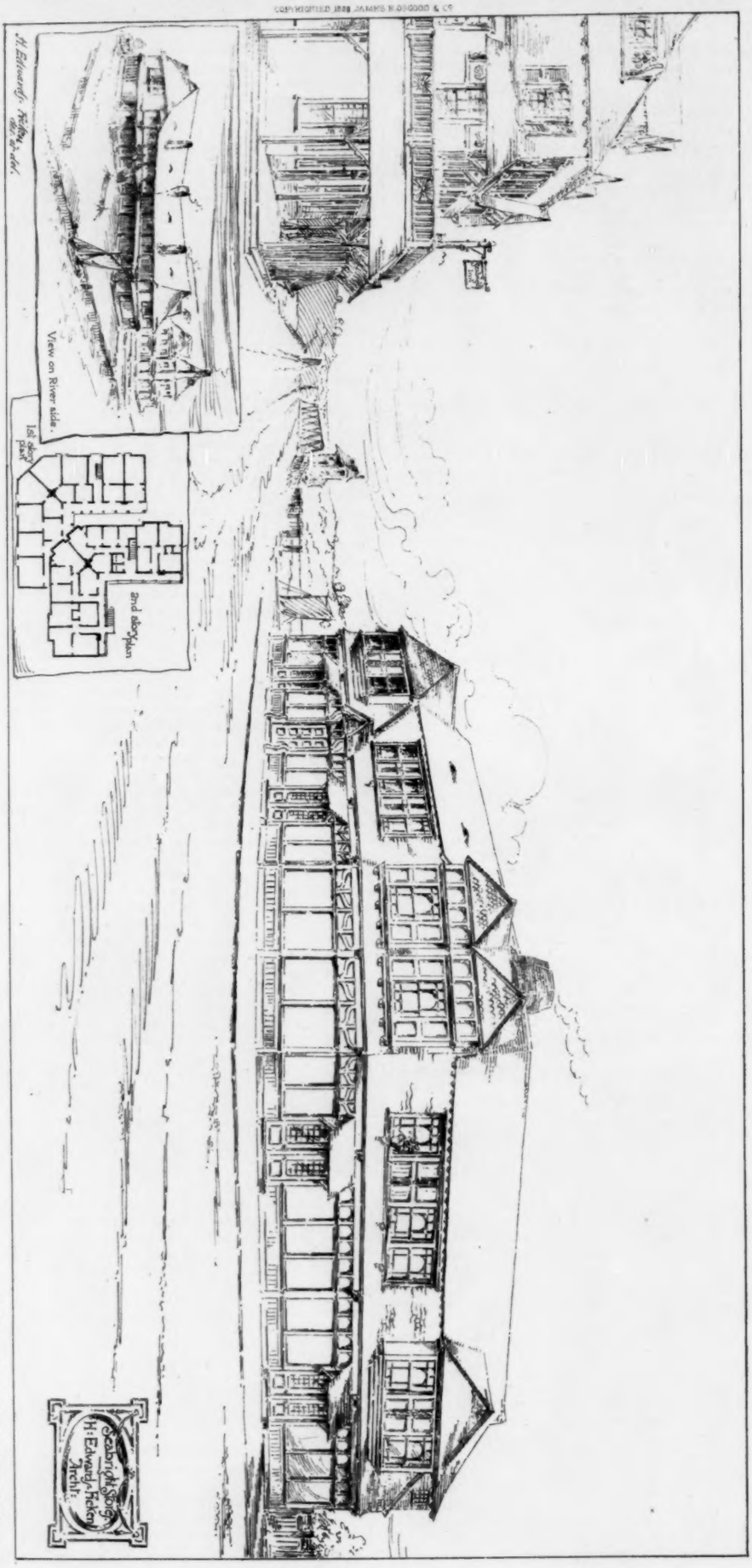
UXMAL.

THE name of Yucatan calls up mental pictures of ruined cities once the home of a lost race, but now the habitation of beasts of prey, birds of gorgeous plumage, and strange reptiles. Perhaps no part of the continent is more interesting to the archæologist, for if these temples and palaces which are buried under the jungle, can be forced to disclose the secrets of their history, they will undoubtedly tell us much about the early civilizations of America and the invasions which destroyed them.

It is now forty years since attention was called to these ruins by Mr. Stevens; but although the importance of his discoveries was recognized by the scientific world, the peculiar difficulties in the way have so hindered the work of exploration that comparatively little has been done. The country is remote, the climate very unhealthy, the natives lazy and suspicious, and the jungle filled with dangers. Hence few have had the opportunity, courage, and patience to continue the work so well begun by Mr. Stevens.

Within the past three years, however, much has been done by Mr. Louis H. Ayme, the United States Consul at Merida, to increase our knowledge of this curious subject. Mr. Ayme is a trained observer, and has thrown himself into the work with great zeal. He has visited most, if not all, of the sixty-three buried cities which have been discovered, and has studied the principal ruins with great care. What is covered by this simple statement, few persons, sitting comfortably at breakfast, can imagine. The ruins are reached only by a ride of eighty miles through the jungle, and when the visitor arrives at the end of his pilgrimage he must know how and where to look or he will not find a trace of a habitation. The site once determined, the rank vegetation which hides it must be cut away, stones scraped and overturned, secret passages explored, images and inscriptions scrutinized, photographs and drawings made, and all under the rays of a tropical sun in jungles which exhale fevers and hide dangers of many kinds.

Mr. Ayme has returned to the United States for the purpose of reporting his discoveries to the scientific societies with which he is in correspondence, and to obtain their help in further prosecution of the work. He ascribes to the ruins of Uxmal and elsewhere an antiquity of not less than a thousand years, though he does not subscribe to the very great antiquity claimed for them by Dr. Le Plongeon. On the contrary, he discredits this theory, while giving his fellow explorer praise for his great learning and enthusiasm. The notion that these ruins date back to some remote epoch has a touch of romance which appeals to the popular fancy, and their appearance does much to make such a theory plausible; but in Yucatan carved stone crumbles rapidly, and within the memory of old people among the natives the ruins have perceptibly changed in appearance. Moreover, it is



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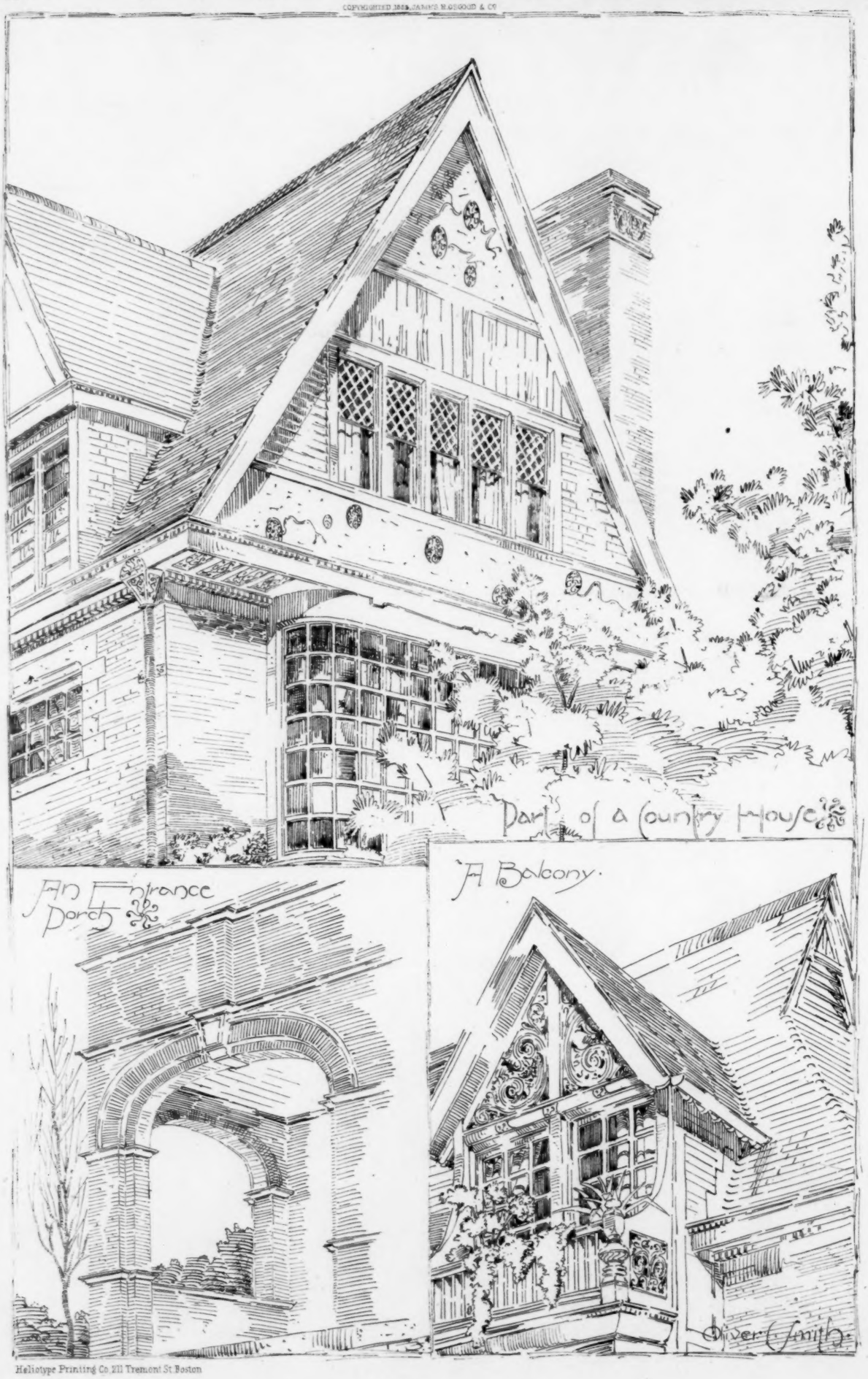

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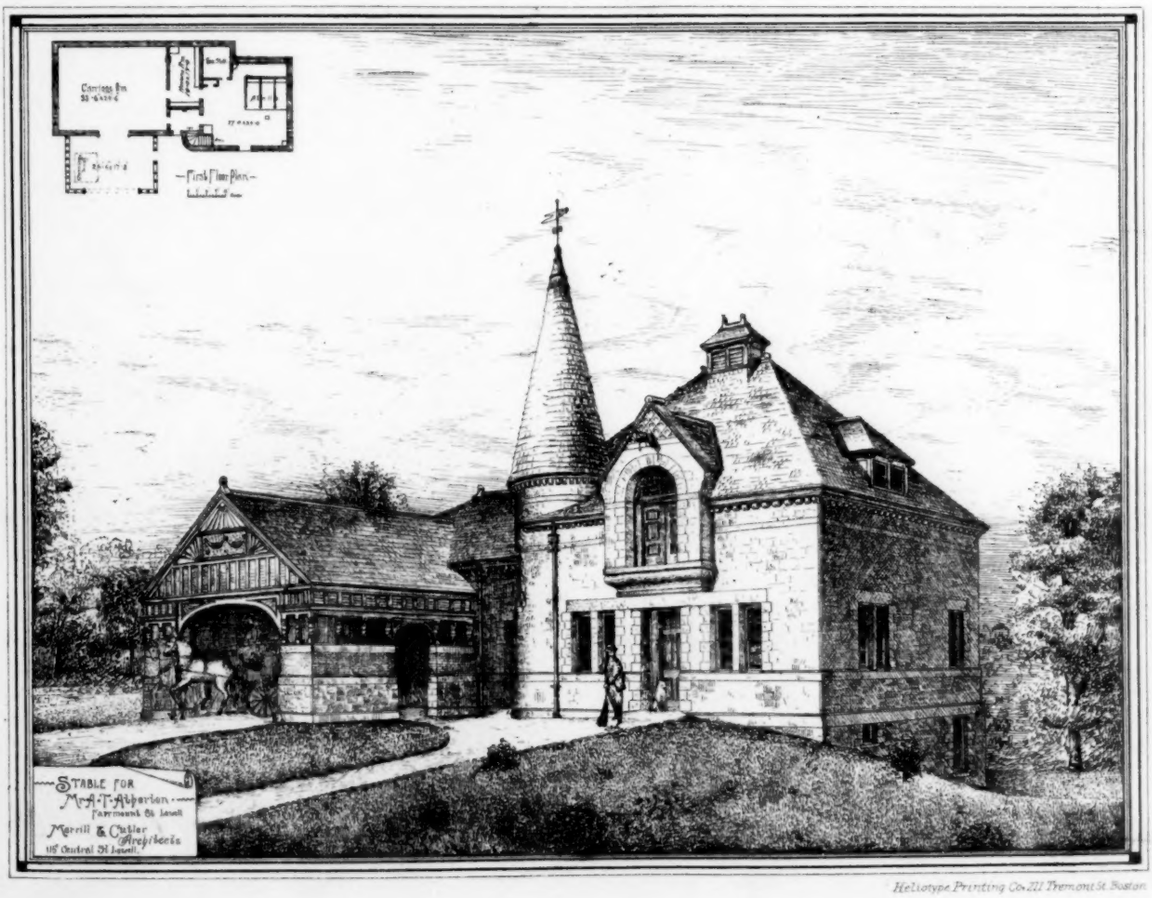
MONUMENT ON THE RHINE.

1093 — 1156.

Benedictiner Abtei Kirche zu Laach.

Frank Zimmermann Desg.



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evident that these cities were several times built over. In fact, the name of "Uxmal" means "three times built." Mr. Ayme believes that the houses were used when the Spaniards came, and in support of this theory, he has found a curious drawing on the wall of a building in Uxmal, which seems to be an effort at the representation of a Spaniard on horseback, as if some native artist had seen the strange visitant on the seaboard and hurried into the interior, where he depicted the foreigner for the information of his countrymen. The meaning of the picture, however, has not been fully settled, nor has their system of hieroglyphics been resolved, and until this is done our knowledge of the people must rest on circumstantial evidence.

It is a curious fact that hitherto no utensils of the aborigines of Yucatan, with very few exceptions, have come to light. A little pottery has been found and some obsidian arrow-heads, worked shells, clay images, and so on, but nothing of importance. Mr. Ayme thinks, however, that he has discovered the location of their cemeteries, or of one at least, and his explorations in future will be directed to ascertaining if his theory in this respect is correct. — *New York Sun.*

WATER-CLOSETS.[1] — XIII.

THIS form of bowl is used by A. G. Myers, of New York, on his pan-closets. In 1876, Harrison, of Philadelphia, received patents on the combination of a closet-bowl and a drip or slop tray in one piece of earthenware. The bowls last mentioned have forms convenient and useful for the purposes they are intended to fulfil. Harrison's bowl, having the smallest surface exposed to fæcal matter dropping upon it, should be preferred.

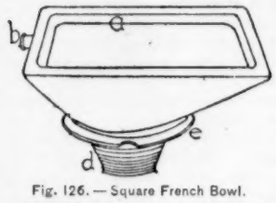


Fig. 126. — Square French Bowl.

a, Flushing-rim. *b*, Supply. *c*, Rim to set on receiver. *d*, Portion that dips into pan.

Among other closets of this class, I will mention Jones's "Empire" closet, Harrison's "Eureka" and "Ne Plus Ultra" closets, Craigie's "Century" closet, which differ from the ones already described only in the form and position of the weighted lever or supply-valve. The "Cistern" pan-closet, as its name implies, is arranged without a supply-valve, being flushed by water from a tank or cistern.

In addition to the nuisance created by the accumulation of filth in the container, the supply-valves, as they are usually made and attached to pan-closets, will generally be found out of order and in a leaking condition, and the joint between the bowl and container is rarely in a perfect state.

Fig. 127. — Harrison's Bowl.

a, Drip-tray. *b*, Bowl. *c*, Supply. *e*, Rim to rest on top of container. *d*, Part to form water-seal in pan.

A container with a vent-pipe and flushing arrangements, and made of earthenware or enamelled iron; a bowl with a flushing-rim and at least an inch-and-a-quarter inlet for the supply-pipe, and the water-supply taken from a small tank or cistern placed directly over the closet, should be obtained, if at any time it be absolutely necessary to select a closet of this class. When the improvements above enumerated have been applied to a pan-closet, it loses its only hold on the people — cheapness.

PLUNGER-CLOSETS.

There is evidence that closets which properly belong to this class were in use both in France and England more than one hundred years ago (See *American Architect*, December 23, 1882, Figures 14–20); in fact, this appears to be the only form or class of modern closet which it can be positively asserted was in use at this early date.

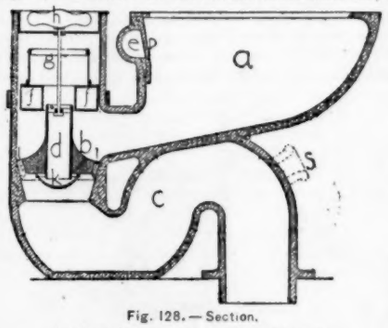


Fig. 128. — Section.
Jennings & Lovegroove's Plunger-Closet.

a, Bowl. *b*, Plunger or plug. *c*, Trap. *d*, Overflow through plunger. *e*, Supply-orifice. *f*, Float for governing the supply-valve. *g*, Lever connecting float with supply-valve. *h*, Hand-pull. *i*, India-rubber band around plunger. *k*, Saucer-trap to the overflow. *l*, Support for supply-valve. *m*, Cross-bar in plunger. *p*, Fan. *s*, Dotted lines show where vent-pipe is formed on Jennings's closets at the present time. *o*, Supply-valve.

It is a strange fact that, while such a large number of patents were issued for improvements or variations on valve and pan closets, not a single attempt was made to improve on the plunger-closets, as no patent was granted until the year 1857, when a patent was issued by the United States for a tank connected with a solid plunger-closet, invented by Henry & Campbells. Under this class properly come all closets that have a plug instead of a valve or pan, to break the connection between the soil-pipe or trap and the bowl. The plug may be solid or hollow, and have its seat over the trap or the soil-pipe, or over an offset from the soil-pipe. The plug is raised and lowered into position by a short rod, which is attached directly to the plug, and at the top of which is the knob or handle for the hand. The bowl is usually kept about half full of water by the plunger. An overflow is provided through the plunger, when it is hollow, and through a separate pipe usually having a water-seal, when it is solid.

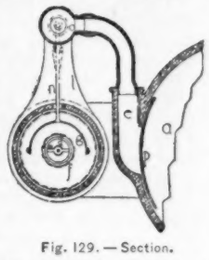


Fig. 129. — Section.
Showing Plunger-compartment and Supply.

Jennings & Lovegroove's Plunger-Closet. — The first letters-patent for a closet of this class issued by Great Britain were issued to George Jennings & Lovegroove, in the year 1858. This might, with propriety, be named as the first invention in the class, containing as it does a novelty in the hollow plunger; the solid plunger being old. Since the date mentioned, Jennings has received a number of patents for alterations in the form and position of the different portions of his closet, which he considers improvements on his first invention. Jennings appears at first to have received the unqualified support of, and recommendations from sanitary engineers and architects; but those who praised his closet most highly have seen reason to withdraw or at least qualify their recommendations. The chamber which contains the float for closing the supply-valve, and also the chamber in which the plunger moves, were connected with the bowl of the closet, and it has been found in practice that this chamber, plunger and float become foul by sediment composed of excrementitious matter collecting on them, as well as larger particles lodging in the concealed parts of the closet, in their passage to the trap. The overflow and plunger have a number of different forms. As first invented (Fig. 128), the closet was made in one piece of earthenware. The supply-valve is operated by a float which encircles the top of the plunger. The mouth of the siphon trap is in the shape of an inverted frustum of a hollow cone, and into this opening the plunger, encircled by a rubber band, fits tightly. The central part of the plunger, which is hollow, and forms the overflow, dips below the water in a small saucer, in this manner forming a water-seal trap. The saucer is suspended from the plunger by means of small hooks and eyes. Jennings on some occasions uses a plunger in which the overflow has a mechanical valve similar to the ball-valve described in connection with the overflow of his valve-closet. This is used in connection with his trapless closet. The ball in this valve is composed of india-rubber, and has its seat on a rubber band or ring, which has a knife edge. On this seat the ball will adjust itself, a slight inequality in the ball, or a small piece of foreign matter making little difference in the efficiency of the joint. A mechanical trap in the overflow is a superfluous precaution, unless the closet is placed in a position where it will be so rarely used that the water-trap might lose its seal by evaporation and thus become inoperative. In a closet like Jennings's, the supply-valve being governed by a float, the bowl would be kept full of water, provided the valve did not get out of order; but the siphon trap under the closet, if the water should evaporate, would allow the gases to get into the room through the plunger-chamber. The Blunt, a water-seal overflow, and the Bowers, a mechanical ball-valve overflow, patent plungers were described by Prof. T. M. Clark (see *American Architect*, No. 142, 1878). He also described the Jennings closet with separate overflow. These closets are so arranged that they may be supplied either from a tank or cistern, or directly from the supply-pipe through one of Jennings's hydrostatic diaphragm supply-valves. This valve is so delicate, and requires such nice adjustment, that it is rarely in proper working order. A. E. Jennings, of New York, furnishes these closets with or without a

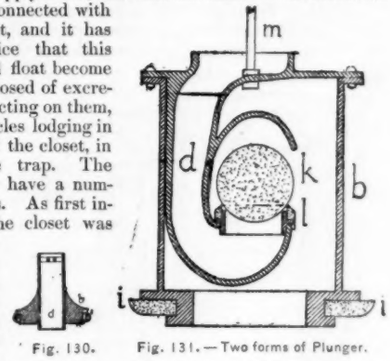


Fig. 131. — Two forms of Plunger.

b, Plunger. *d*, Overflow. *i*, India-rubber ring. *k*, Ball-valve of rubber. *l*, Rubber-seat with knife edge.

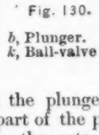


Fig. 130.

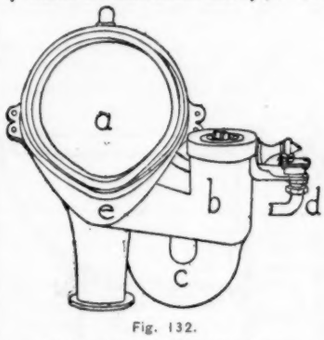


Fig. 132.
Urinal and Plunger-Closet Combined.

a, Bowl of closet or urinal. *b*, Plunger compartment. *c*, Trap. *d*, Supply-valve. *e*, Projecting lip.

[1] Continued from page 234, No. 386.

trap in one piece of earthenware, or with an earthenware bowl, a plunger compartment, and trap or offset of iron. The trap is properly provided with a vent-pipe at the crown, on the side connecting with the soil-pipe.

The Jennings "Night Urinal and Water-Closet" is a fixture, with a high earthenware back and projecting lip, intended to stand without wood-work, made in one piece of earthenware, for bowl, plug, chamber and trap.

For the purpose which Jennings claims utility in his closet, and under such circumstances if they should arise, a closet of this class would undoubtedly be useful. He says: "the object being to save water from sinks, waste-pipes, or other sources where the water-supply will be limited." Jennings's closets have been used extensively in all civilized parts of Europe and America.

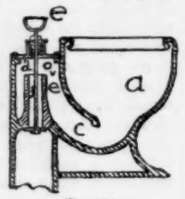


Fig. 133.
Latham's Closet.
a, Bowl. *c*, Trap.
d, Plunger-chamber.
b, Vent. *f*, Overflow.

Quite a number of English and American inventors have followed in Henry & Campbell's, and Jennings & Lovegroove's steps, making supposed improvements on their closets, the only real improvements being in the form of the supply-valve and in contrivances for flushing the plunger-chamber. The variations consist in the form and position of the supply-valves, plunger-chamber, plugs or plungers, and the overflow. Closets of this class divide naturally into two forms or types, those which follow the Jennings idea having hollow plungers, while the closets which have solid plungers had their prototype in the closets used more than a hundred years ago.

Renison's Plunger. — The second patent for a hollow plunger was issued to Thomas Renison, a plumber of Glasgow, by Great Britain, in 1862. The plunger is so arranged that the pressure of compressed air confined within the plunger will retain the water at any desired height in the bowl; but when the water rises above the height for which the mechanism is arranged, it overcomes the force of the air and flows through the plunger. This plunger is formed by a small cylinder placed within a large one, a space for air being left between them, and the top, to which the hand-pull is attached, is covered over without an opening. The plunger fits into a similar double compartment, which forms a part of the plunger-chamber. This closet is not practicable, as the chamber in which the plunger fits would in a little while be filled with excrementitious matter, so the plunger would be useless.

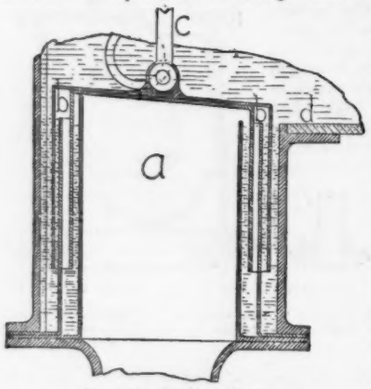


Fig. 134. — Renison's Plunger.
a, Plunger. *b*, Compressed air. *c*, Hand-pull.
d, Bowl.

Baldwin Latham's Closet. — Baldwin Latham, in his work on sewerage, describes a plunger-closet which he designed as an improvement on the simple hopper-closet. The bowl and plunger-compartment are in one piece. The plunger, which is hollow, retains a large amount of water in the bowl. As is the case in other closets of this class, when the plunger is raised a large body of water is discharged through the soil-pipe, in this manner tending more effectually to scour it than would otherwise be the case. The bottom or outlet from the bowl, and the opening into the soil-pipe are so arranged as to form a water-seal trap. The plunger-compartment has a special vent-pipe, and the bowl a flushing-rim, while the rod connected with the hand-pull passes through a stuffing-box, thus effectually preventing the passage of gas at this point.

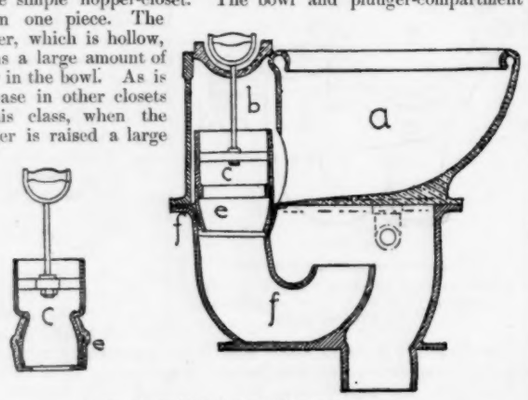


Fig. 135. — Tylor & Sons' Plunger-Closet.
a, Bowl. *b*, Plunger-chamber. *c*, Plunger. *f*, Trap.

Tylor & Sons' Plunger-Closet. — Tylor & Sons, of London, in 1873 invented a plunger-closet, the novelty of which consisted in the form of the plunger and trap under the closet. The plunger is hollow, the hand-pull being attached to it by means of a bar which extends across the plunger on the inside. The bottom of the plunger is bell-shaped, with a ridge encircling it. Over this part of the plunger a rubber cylinder or pouch is stretched. This plunger has its seat on a rubber band. In this manner it is proposed to make a tight joint. The plunger forms the overflow and has its seat on the opening of a U-shaped trap; the other end opens into a chamber which is joined to the soil-pipe. There are a number of corners and hollows in a trap of this kind, that would be sure to collect and retain filth, and for that reason it should be avoided.

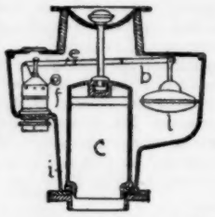
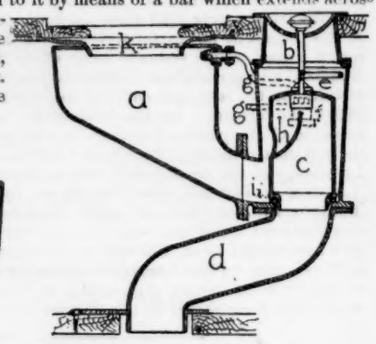


Fig. 136.



Demarest's Plunger-Closet.

Fig. 137.

a, Bowl. *b*, Plunger-chamber. *c*, Plunger. *d*, Offset. A siphon-trap may be put in same place.
e, Lever connecting float and supply-valve.
f, Supply-valve. *g*, Supply-pipe. *h*, Overflow. *i*, Rubber band around the plunger. *k*, Slop-sate or urinal. *l*, Float. *o*, Perforations in supply-valve for washing plunger-compartment.

Demarest's Plunger-Closets. — J. L. Mott & Co. manufacture several forms of plunger-closets: the "Demarest," the "Hygeia," and "Premier." Each has a bowl with a side outlet, while the earliest pattern has a compartment that contains the plunger, a float for governing the supply-valve, and the supply-valve. The plunger is a hollow cylinder closed at the top. The overflow is through an opening in the side, from below which a partition rises to a slight distance above the top of the opening. In this manner a water-seal trap is formed to the overflow. The bottom of the plunger is encircled by a rubber band or ring, which has a seat on the top of the soil-pipe offset or trap. The float is connected with the supply-valve by means of a lever that encircles the rod of the hand-pull, the float and supply-valve being on opposite sides of the plunger, so that the flow of water would be shut off when it had reached the top of the overflow. The upper part of the supply-valve has a row of small holes around it, so arranged as to throw small jets of water into the plunger-chamber. These jets are for the purpose of washing off any sediment or waste matter that may collect on the plunger, float, or the sides of the compartment. This closet has been extensively used in this country, and has been patented both in this country and in England. John Demarest designed the "Hygeia" and "Premier" as an improved form of plunger. The plunger consists of a simple cylinder, open at each end, with a neck formed on the bottom, around which a vulcanized rubber band, circular in section, is stretched. This band enables the plunger to make a tight joint on its seat. The overflow is between the plunger-chamber and the plunger, and forms an opening about an eighth of an inch around the plunger. The hand-pull has a short lever bolted to it, the other end of which is connected by a chain to a tank or cistern, from which the water is conducted by an inch-and-a-quarter pipe to a flushing-rim around the closet; in this manner the sides of the closet are washed more efficiently than they would be with a simple pan.

The "Premier" closet differs from the "Hygeia" only in the fact that it is arranged for a supply-valve instead of for a cistern. The valve is attached to the top of the plunger-chamber, and is operated by a short lever similar to the one used in connection with the tank. These closets have porcelain bowls and enamelled iron plunger-chambers, while the plunger and the cover for the chamber, bridge and lever are zinc-coated (galvanized), and put together with brass bolts. The bowl is connected with the other parts of the

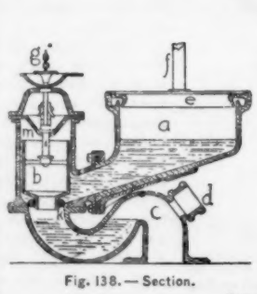


Fig. 138. — Section.

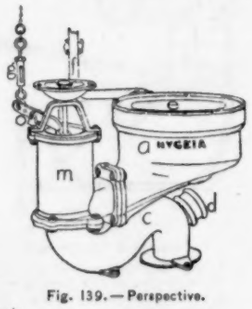


Fig. 139. — Perspective.

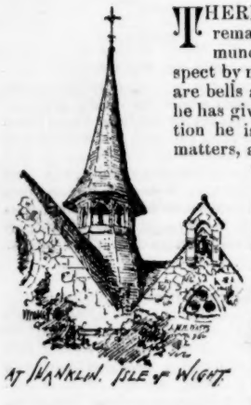
Demarest's Hygeia.

a, Bowl. *b*, Plunger. *c*, Trap. *d*, Vent to trap. *e*, Flushing-rim.
f, Supply from cistern. *g*, Chain to cistern. *i*, Hand-pull.
k, Rubber ring. *m*, Plunger-chamber. *o*, Lever.

closet by means of screw-bolts and clamps. They have above the floor a straight outlet, an offset, or a trap. The trap and offset have an opening at their crown, with a bell into which a vent-pipe must be caulked. Where the trap or outlet passes through the floor there is a broad flange, which is arranged so as to be screwed to the floor over the soil-pipe.

For a plunger-closet, these closets are probably arranged as well as a closet of this class could be made, as they have a small plunger-chamber, no float, a rubber ring on the bottom of the plunger, a flushing-rim to the bowl, a siphon vented trap above the floor; while the different parts are thoroughly put together, well made and of good materials. The only arrangement devised for washing the plunger-chamber consists in the water passing between the plunger and its chamber to the overflow.

BELL-TOWERS.[1]



THERE are some few things as to which the remarks of that amusing gentleman, Sir Edmund Beckett, can be listened to with respect by members of the profession; among these are bells and bell-towers, to the study of which he has given more than the superficial consideration he is wont to give to other architectural matters, and we believe the following remarks will be found of value: —

I proceed to notice a few things relating to bells which are more the business of architects than bell-founders, except that architects nowadays rather think it their business to ignore everything that has to be done in a building after they have left it. I have known plenty of cases where they knew perfectly well that it was intended to have peals of bells and clocks, and yet have built costly towers without condescending to learn, either by reading or inquiry, what provisions should be made, or even what dimensions were required. That they may have the less excuse, and that those who want church bells may have some idea of what their architects ought to do, I will give the following information as the result of my own experience; and I am probably the only person living who has the experience of designing both bells and clocks, and the towers in which they are to be placed.

It follows from what I said before about bell-frames, that the smallest tower fit for even a small peal of six bells, should be 11 feet square inside; and the smallest for a very moderate peal of eight should be 16 feet. Even these sizes make the ropes hang closer to the walls than they ought to do, and therefore they are much better somewhat larger. Very few *old* towers with eight bells are so small as 16 feet; they are much more frequently 20 feet, and those with six bells at least 14 feet. In what is called "A Book on Building," I have shown how much narrower modern towers generally are than old ones; but I am only now dealing with them as campaniles, which in fact they always are, without reference to architectural reasons in the same direction. Of course when ten or twelve bells are intended, the towers should be larger still, certainly not less than 22 and 24 feet square inside.

There is also another reason for it. Bells sound much better in a large chamber than a small one. Any one who has heard the Doncaster bells will hardly believe that the three bells in All Saints' Church, Margaret Street, are repetitions by the same founders of the first, fourth, and tenor of Doncaster. But the Doncaster bell-chamber is 23 feet square, and Margaret Street not more than 14 feet, or just two-fifths of the area. And the same at All Saints', Halifax, with a spire 240 feet high. The bells, a smaller peal than Burton, could not be got into it on one level.

Another important consideration is the windows. I have known two cases, both in Leeds as it happened, where clock bells had to be re-hung some feet higher up than the architects had provided, because they did not know that the bells ought to be above the sills of the windows. Louvres again are a frequent source of trouble, by being put too close or too much overlapping, even if they are on that ugly and now fashionable foreign plan of having a few enormously wide or deep boards sticking out beyond the face of the mullions, which never were in genuine English architecture. It is no use trying to keep out snow, or even small driving rain, and it does no harm if bell-hangings are kept painted and the floor is made waterproof and drained. Louvres just overlapping will keep out ordinary rain, and I am afraid cannot be dispensed with in church towers, though they are at Westminster, where the floor under the bells is flagged. It is the custom in the eastern counties to put small clock bells quite open on the tops of the church towers, instead of making the clock strike on the tenor of the peal, and they are generally heard farther; in fact, a clock bell (if only a clock bell) cannot be too open, as it has no hangings that will spoil with rain if the hammer gudgeons are occasionally oiled — or even if they are not, for a long time.

There must be two floors between the ringers and the bells, or they cannot hear for the noise. In most towers of good size this can easily be done, but in low central towers it is sometimes difficult. The plan to be adopted then is to lay a strong floor about a foot below the bell-floor by straps from the great beams, and cover it a few inches thick with large gravel, or broken stones (not sand), or else to fill up the whole space between the floors with shavings, including a box full of them for the trap-door which must be left under the great bell. I need hardly say that the great floor beams ought to come under the beams of the bell-frame as much as possible, and should rest on large corbels, and for heavy peals should be strutted also from corbels lower down. This is too often neglected, and a floor made at random, and then the bell-founder is expected to fix a firm bell-frame on a floor not fit to carry it.

But the worst abomination of all, committed by architects and church restorers, is the destroying of the belfry (*i.e.*, ringing chamber) floor for the sake of making a "lantern" of the tower. This has been done at Hereford Cathedral, Ludlow and Boston churches, Merton College Chapel, St. Alban's Abbey, and divers other places. At St. Alban's, where the space is abundant, they have lately re-hung the bells higher up, and so regained a ringing chamber, but not so at the others. At Howden the ringing is done inconveniently and dangerously from a narrow gallery round the tower, and so it is at Merton Chapel — unless they ring from the ground now, as the tower is practically in the ante-chapel. At Pershore, Sir G. Scott did a better thing than a gallery, by the converse of it, a sort of insulated floor, leaving an open space round it except where there is a bridge to reach it. Mr. Cattley and I did much the same at Worcester Cathedral, which was probably the best belfry in England on account of the great width of the tower, 32 feet inside. The much larger central towers of York and Lincoln do not contain the peals of bells; they are in the smaller western towers. In the central tower which I designed for Mr. Bass, at Burton, there are small spandrel windows to light the space under it, as in the grand old church of Hedon, so that the belfry floor can still be at the natural place, about the level of the roofs of the four limbs of the church; and it is 22 feet high. At Doncaster there was height enough above the lower windows of the tower.

But this lanterning mania has destroyed some belfries irreparably, and ringers will not ring long in dark holes about eight feet high, which were only intended for the intermediate chamber or clock-room. That demon of church destruction, under the name of restoration, Wyatt, in the last century and early in this, pulled down the old campanile of Salisbury, and the bells had to be sold because nobody dared ring them in the great overloaded steeple of the cathedral. Well might Pugin say of him, in one of his "restored" churches, "Yes, the monster has been here!"

Where it has become impossible to ring bells properly, the best thing to do is at once to fit them up for chiming only, *i. e.*, tolling with levers. Though inferior to ringing in some respects, and much less interesting to ringers, it has a sweeter sound, but feebler. The clappers ought to be heavier for it, as they strike much softer: especially when there are only three or four bells, chiming sounds much better than ringing. The tolling of three large bells has a very grand sound, and the ringing of two bells only frame high, *i. e.*, swinging up to horizontal, so that they strike quickly, has a pleasant and lively sound. I always admire it at New College Chapel when I visit Oxford.

The windows of bell-chambers, and of every opening in the tower or spire above them, should be completely covered with strong wire netting which must also be kept in repair, to keep out the birds, which otherwise fill the place with sticks and dirt, which caused the second fire at York Minster, and the destruction of the bells. The netting should be of about 18-gauge, woven in squares of half an inch, not in long openings tied with thin wire which soon perishes.

The well-known story of St. Paul's clock being heard at Windsor striking thirteen by a sentinel who was charged with being asleep, is often regarded as fabulous; and so it would be in the present feeble condition of the striking. But Reid says, in his book on clocks, that he heard it there himself, and I have heard an officer quartered there say the same. The Doncaster clock striking on a bell of only thirty hundredweight, has been heard eleven miles in a very flat country. Nobody has yet solved the problem why a wind which you can hardly feel will make the difference of your hearing bells half a mile or ten miles, according as the wind is with you or against.

[1] From "*Clocks and Watches and Bells.*" Crosby Lockwood and Co., 1883.

IRON FURRING-RODS FOR WIRE-LATHING.

NEW YORK, June 4, 1883.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs,— It may interest some of the profession to know that there is a patent held by parties in New York, issued three years since, covering the use of small iron rods as furrings or supports for the ordinary wire-lathing for ceilings in place of the customary wood strips.

As a royalty is exacted for the use of this device, it is interesting to know whether any case can be cited where wire-cloth has been so supported prior to January of 1880. Probably architects and plasterers in Chicago, where large quantities of wire-cloth have been used since the great fire, may be able and willing to give the desired information.

ARCHITECT.

THE GOLDEN BOUGH.

Hartford, June 6, 1883.

To the Editors of the American Architect: —

Dear Sirs,— Could you favor me with the legend of "*The Golden Bough*," as illustrated by Turner in his famous painting of that name? Very truly, Avernus.

A QUESTION OF CHARGES.

June 6, 1883.

To the Editors of the American Architect: —

Dear Sirs,— Some months ago I made measurements and scale-drawings of a block of houses which were to be torn down and re-erected in substantially the same form elsewhere. These measurements and drawings were to be used for obtaining bids for the taking down and re-erecting. No specification was made.

At this stage of proceedings the owner decided to employ another architect, who offered to do his work for about half the usual commission.

In making out my bill for services I wish to know the customary charge for such work. The rules for the American Institute of Architects provide for "an additional charge to be made for surveys and measurements," but do not state the amount of such charge. I have thought that the making of the measurements, and the preparation and figuring of the drawings, as was necessary in this case, might be considered equivalent to a preliminary study, for which the regular charge is one per cent on cost of buildings. I would be glad of the opinion of the editors of the *American Architect*, and of others on this question. Very respectfully, Architect.

[It is hardly possible to judge of the value of the work of which our correspondent speaks. We have known a regular charge of twenty-five dollars to be made for ordinary measurements for alterations of a single building, independent of any work on the drawings, and this is certainly not excessive. For office work, which is not exactly in the line of ordinary commissions, a good and common practice is to keep a record of the time of the persons employed on it, which may, on occasion, serve to fix the cost, and the proper charge to be made.— Eds. American Architect.]

NOTES AND CLIPPINGS.

The Mainmast of the "Ironsides." — A correspondent of a New York paper says; "An incident of early days on the Delaware is always recounted with pleasure by the old inhabitants, and as they vouch for its authenticity it must be true. In 1786 Simeon and Franklin Westfall, of New Jersey, took the contract to furnish the Government with a white-pine tree, which was to be of an extraordinary size, as it was wanted for the mainmast of a war frigate about to be built. They were to receive $100 for the stick. They hunted the Delaware valley from the Neversink to its head-waters, but were unable to find the tree which would answer the specifications of the contract. At last, when they were about to give up the search, they came upon a pine which they believed would suit. It was on an eminence in Pike County, near the present village of Mast Hope, and three miles from the river at Big Eddy. Upon measuring the tree they found that it was too short by ten feet. Upon digging at its root, however, they discovered that the tree ran straight down in the earth, and they succeeded in excavating the lacking ten feet. The tree was felled, hauled to the river, and floated to Philadelphia, and became the mainmast of the frigate Constitution, "Old Ironsides," and carried the American colors in all the glorious victories won by that vessel in the war of 1812."

The Statistics about the Brooklyn Bridge. — The following condensed statement of leading facts about the new structure, compiled by the Boston *Herald*, will be of interest: —

Construction commenced January 3, 1870.
Size of New York caisson, 102′ x 172′.
Size of Brooklyn caisson, 102′ x 168′.
Timber and iron in caisson, 5,253 cubic yards.
Concrete in well-holes, chambers, etc., 5,669 cubic feet.
Weight of New York caisson, about 7,000 tons.
Weight of concrete filling, 8,000 tons.
New York tower contains 46,945 cubic yards masonry.
Brooklyn tower contains 38,214 cubic yards masonry.
Length of river span, 1,595′ 6″.
Length of each land span, 930′ 1,860″.
Length of Brooklyn approach, 971′.
Length of New York approach, 1,562′ 6″.
Total length of bridge, 5,989′.
Width of bridge, 85′.
Number of cables, 4.
Diameter of each cable, 15¾″.
First wire was run out May 29, 1877.
Cable making really commenced June 11, 1877.
Length of each single wire in cables, 3,579′.
Length of wire in four cables, exclusive of wrapping wire, 14,371 miles.
Weight of four cables, inclusive of wrapping wire, 3,538½ tons.
Ultimate strength of each cable, 12,200 tons.
Weight of wire, nearly 11 feet per pound.
Each cable contains 5,296 parallel, not twisted, galvanized steel oil-coated wires closely wrapped to a solid cylinder 15¾″ in diameter.
Depth of tower foundation below high water, Brooklyn, 45′.
Depth of tower foundation below high water, New York, 78′.
Size of towers at high water line, 59′ x 140′.
Size of towers at roof course, 53′ x 136′.
Total height of towers above high water, 278′.
Clear height of bridge in centre of river span above high water at 90° Fahrenheit, 135′.
Height of floor at towers above high water, 119′ 3″.
Grade of roadway 3¼′ in 100′.
Height of towers above roadway, 159.
Size of anchorages at base, 119′ x 129′.
Size of anchorages at top, 104′ x 117′.
Height of anchorages, 89′ front, 85′ rear.
Weight of each anchor plate, 23 tons.

Utilization of Cinders and Coal Refuse. — Noack Dollfus has prepared a valuable paper upon the preparation of *béton* from slag and other refuse, by the addition of about twenty per cent of lime. By using the methods and precautions which he points out, foundation walls and superstructures of great strength and durability can be made.— *Société Industrielle de Mulhouse.*

Miniature Artificial Cyclones. — For several years Professor Douglas, of Ann Arbor University, has been manufacturing them. He does it in a very simple manner, by suspending a large copper plate by silken cords. This plate is charged heavily with electricity, which hangs down like a bag, underneath, and is rendered visible by the use of arsenious acid gas, which gives it a green color. This formation is a miniature cyclone as perfect as any started in the clouds. It is funnel shaped and whirls around rapidly. Passing this plate over a table, the five-cent cyclone snatches up copper cents, pens, pith-balls and other objects and scatters them on all sides. The experiment is often made in Ann Arbor, and all the students are familiar with it.— *Kansas City Journal.*

The Rue du Jour, Paris. — One of the oldest streets in Paris is about to disappear, as the Rue du Jour, near the Church of St. Eustache, which dates from the thirteenth century, will shortly be demolished, in connection with the improvements which are being made in this part of Paris. The Rue du Jour, so named on the *lucus a non lucendo* principle, was very narrow and gloomy, and the only building of any historic interest is an old house now used as a china warehouse, which was known two hundred years ago as the Hôtel Royaumont, and was at that time the residence of Philippe Hurault, Abbot of Royaumont. At his death it became the property of François de Montmorency, who turned it to a very singular use, making it the trysting-place of all persons who were about to fight a duel, as lately detailed in these pages.

Old Castings. — The art of casting in metal is so dependent on the clay model from which the mould is obtained that it might almost be assumed *à priori* that improvement in plastic art would necessarily lead to a great development of metallurgical skill, and accordingly we find two celebrated Samian artists, Theodorus and Rhœcus, credited with the invention of casting in bronze at a date probably not many years distant from that of Butades. When ancient writers speak of casting in metal as the invention of the two Samian artists, we must understand by this statement that improved kind of casting in which the metal is poured between the mould and a central core, and which is called hollow casting, in contradistinction to the more primitive process in which the molten metal entirely fills the mould, and which is therefore called solid casting. We know that this clumsier solid casting was familiar to the Egyptians, the Phœnicians, and the Assyrians, centuries before the time of Theodorus, and we find it used for the handles of large bronze craters in Mycenæan tombs, and in small figures such as are found in the lowest stratum of the soil of Olympia. It was, however, unsuitable for statues on a large scale on account of its great weight and cost; therefore it was that most Greek statues in bronze were originally made of separate pieces of metal hammered out on a mould, and then nailed together over a wooden core. Such figures, called *sphyrelata*, or hammered work, were still extant in Greek temples in the time of Pausanias. The invention attributed to Theodorus and his brother substituted for this primitive kind of metallurgy an easier and surer process, which after having been brought to an extreme perfection by the Greeks, has been handed down to modern times with little (if any) improvement in its technical processes. — *C. T. Newton, in the National Review.*

Inspecting the Channel Tunnel. — The channel tunnel was officially inspected May 23, by the Parliamentary Committee. The visitors, who arrived at Dover by the Brussels express from London, included the Marquis of Lansdowne, the Earl of Devon, Lord Aberdare, Lord Barrington, Lord Camperdown, Sir Hussey Vivian, Sir Massey Lopes, Mr. A. Peel and Mr. Baxter. At Dover the party was joined by Major-General Newdigate, C. B., commanding the Southeastern District, and his staff, including Colonel Buchanan, Assistant Adjutant-General; Colonel Knight, Assistant Quarter-Master-Gen.; Mr. Bartley Frere, Aide-de-camp; Colonel Gordon, commanding Royal Engineers, and other officials of the Royal Artillery and Royal Engineers, who were specially detailed, at the request of the Secretary of State, to accompany the committee on their visit of inspection. A special train conveyed the party from Dover to the works at Shakespeare's Cliff, where preparations for the visit had been going on for some days. After the machinery had been inspected on the piece of table-land above the works, the visitors proceeded down the shaft to the heading, conducted by Mr. Shaw, Secretary of the Southeastern Railway Company. The heading was lighted by means of the electric light, and a careful inspection was made along the entire length of the tunnel, a distance of about a mile and a quarter. The heading was quite dry and had very much the same appearance in this respect as it had when the works were in full operation. On the party reaching the end of the tunnel the boring machine was set in motion for a few revolutions for the information of the committee. Of course, any observations with regard to the strategical bearing of the undertaking were carefully avoided, but there appeared to be but one opinion as to its practicability, and general interest was manifested in the works. After spending upwards of an hour and a half at the tunnel the party partook of luncheon at the Lord Warden Hotel, and then drove to the site where it is proposed to make the entrance to the tunnel, some two or three miles inland. The party afterwards visited the fortifications at the Castle, which would practically command the tunnel entrance. Particulars and observations were specially taken with regard to the existing defenses and the proposed route and exit from the tunnel, and upon the question of defense generally. — *London Standard.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

278,692. DOOR-HANGER. — Lloyd Eberhart and Irving D. Stevens, Joliet, Ill.

278,704. DOOR-KNOB ATTACHMENT. — William F. Hall, Boston, Mass.

278,719. DOOR-LOCK. — John Mathisen, Christiana, Norway.

278,722. ROOFING-FABRIC. — Henry M. Miner, Pittsburgh, Pa.

278,723. SEWER CAP AND JOINT. — Alexander Monteath, Chicago, Ill.

278,736. GRATE-BLOWER. — Chas. A. Preston, Norwalk, O.

278,739. HYDRAULIC AND OTHER ELEVATORS. — Gustavus N. Reiff, Philadelphia, Pa.

278,751. DRIVEN WELL.—Gehyleman Shaw, Bridgeport, Conn.

278,763. FIRE-ESCAPE. — Henry L. Barnard, Greenfield, Mass.

278,768. FIRE-ESCAPE. — John S. Bowman, Detroit-Mich.

278,783. DOOR-SPRING. — Geo. W. Downes, New York, N. Y.

278,791. FIREPLACE AND CHIMNEY. — William C. Hamner, Morganfield, Ky.

278,802. SASH-FASTENER. — John Kubler, Hot Springs, Ark.

278,807. FIRE-ESCAPE. — Chas. F. Marskey, East Saginaw, Mich.

278,820. FIRE-ESCAPE. — Jacob Reese, Pittsburgh, Pa.

278,839. SEWERING AND DRAINING TOWNS. — Geo. E. Waring, Jr., Newport, R. I.

278,847. FIRE-ESCAPE. — Christian E. Baker, Chicago, Ill.

278,863. DOOR-SECURER. — Amos Boucher, Monclova, O.

278,865. FIRE-ESCAPE. — Marvin N. Brainard, Hartford, Conn.

278,932. SOLDERING-IRON. — John Gibbons, West Troy, N. Y.

278,974. ELEVATOR-GUARD. — J. Jerome Knapp, South Gardner, Mass.

279,006. STRIKING-PLATE FOR LOCKS. — Emery Parker, New Britain, Conn.

279,011. FIRE-PROOFING AND FURRING DEVICE. — George B. Phelps, Washington, D. C.

279,024. AUTOMATIC SAFETY-BRAKE FOR ELEVATORS. — Wright J. Seaton, Wyandotte, Kan.

279,048. WATER-CLOSET. — William Tweeddale, Brooklyn, N. Y.

279,054. FIRE-EXTINGUISHER. — George F. Wagner, Omaha, Neb.

279,064. BURGLAR-ALARM AND DOOR-BELL. — Louis E. Williams, Peekskill, N. Y.

279,111. BLIND-STOP. — Charles F. Vandervoort, Corpus Christi, Tex.

279,112. LOCK. — Oscar H. Woodward, and Orrin L. Woodward, Clinton Junction, Wis.

SUMMARY OF THE WEEK.

Baltimore.

CHURCH. — Canton M. E. Church, brick and stone, 46′ x 70′; style, Gothic; seating capacity, four hundred; cost, $15,000; Chas. L. Carson, architect.

BUILDING PERMITS. — Since our last report twenty permits have been granted, the more important of which are the following: —

W. H. Sharp, two-st'y brick building, n s Fayette St., between Crooked Lane and Little Sharp St.

Alex M. Briscoe, 6 two-st'y brick buildings, w s Gilmor St., between McHenry and Pratt Sts.

John S. Smuck, 5 two-st'y brick buildings, w s Calhoun St., s of Pratt St.

Chas. Q. Ranft, three-st'y brick building, n s German St., between Pine and Fremont Sts.

Wm. A. Hammond, 5 three-st'y brick buildings, n s Hoffman St., between Division St. and Brewer Alley; and 4 three-st'y brick buildings, n s Hoffman St., between Pennsylvania Ave. and Brewer Alley; and 4 three-st'y brick buildings, e s Brewer Alley, n of Hoffman St.

W. H. Yeatman, 13 three-st'y brick buildings, s s Saratoga St., commencing s e cor. Arlington Ave.; and 15 three-st'y brick buildings, e s Arlington Ave., s of Saratoga St.

Boston.

BUILDING PERMITS. — *Brick.* — *Tremont St., Nos.* 463 *and* 465, Ward 16, for Gibson & Allen, tenement and store, 24′ x 44′, four-st'y flat; J. E. Potter, builder.

Commonwealth Ave., No. 223, near Exeter St., Ward 11, for Geo. Higginson, dwell., 26′ x 75′, five-st'y mansard; Weston & Shepard, builders.

Tremont St., Nos. 459 *and* 461, Ward 16, for Mary S. Knowlton, dwell. and store, 24′ x 46′, four-st'y flat; J. E. Potter, builder.

Marlborough St., between Exeter and Fairfield Sts., for Geo. R Minot, dwell., 30′ x 76′, four-st'y mansard; Woodbury & Leighton, builders.

Wood. — *Waumbeck St.*, near Warren St., Ward 21, for Neil McNeil, dwell., 26′ x 40′, two-st'y pitch; McNeil Bros., builders.

Clapp Pl., near Boston Pl., Ward 24, for Frederick Weis, dwell., 23′ x 30′ and 16′ x 18′, two-st'y pitch; Wm. Eadie, builder.

Boston St., near Dudley St., Ward 20, for Samuel B. Pierce, dwell., 22′ x 32′, two-st'y pitch; Wm. J. Jobling, builder.

Heath St., near Lawn St., Ward 22, for Patrick Owens, dwell., 22′ 6″ x 39′, three-st'y pitch; Samuel Rantin, builder.

Brown Ave., rear, near Ashland St., Ward 22, for Frank B. Skelton, poultry-house, 15′ x 40′, one-st'y pitch; Frank B. Skelton, builder.

Old Harbor St., Nos. 25 *and* 27, Ward 15, for Dennis Reardon, 2 dwells., 20′ x 34′ and 13′ x 17′, two-st'y mansard; Wm. M. Henderson, builder.

East Third St., No. 724, Ward 14, for John H. Walker, dwell., 21′ x 30′ and 13′ x 17′, two-st'y mansard; David A. Berry, builder.

Parkman St., near Adams St., Ward 24, for Darius Eddy, dwell., 21′ and 26′ x 29′ and 14′ x 16′, two-st'y pitch; Studley Bros., builders.

Brown Ave., near Ashland St., Ward 23, for J. E. Blakemore, dwell., 19′ and 26′ x 24′ and 34′, two-st'y pitch; Alexander Rogers, builder.

Metropolitan Ave., near Hilburn St., Ward 23, for Thomas H. Cummings, dwell., 16′ and 29′ x 34′, two-st'y pitch; John B. McAleed, builder.

Storey Pl., near Greenough Ave., Ward 23, for Edwin Sherwin, dwell., 30′ and 32′ x 34′ and 17′ x 22′, two-st'y pitch.

Lamartine St., near Roys St., Ward 23, for Edmund H. Cook, dwell., 27′ x 32′, three-st'y flat; John L. Dakin, builder.

Rutherford Ave., e s, near Mills St., Ward 4, for David Stearns, wagon-house, 20′ x 35′ and 30′ x 35′, one-st'y flat; Robert Wiley, builder.

Washington St., opposite Lake St., Ward 25, for Jacob T. Taylor, dwell., 23′ x 32′, two-st'y pitch; J. C. Wadleigh, builder.

Jamaica St., near Woodman St., Ward 23, for John L. Chenery, dwell., 20′ x 26′, two-st'y pitch; E. A. Carter, builder.

Wayne St., near Maple St., Ward 21, for Edward A. Pierce, dwell., 29′ and 35′ x 40′ and 16′ x 17′, two-st'y pitch; S. E. Potter, builder.

Walnut Park, rear, Ward 23, for Charles M. Clapp, stable, 40′ x 44′, one-st'y hip; Wm. H. Stewart, builder.

Washington St., Nos. 3107 *and* 3109, for Francis W. Kittredge, dwell. and store, 20′ and 26′ x 54′, two-st'y mansard.

Washington St., Nos. 3111 *and* 3113, for Francis W. Kittredge, dwell. and store, 11′ and 26′ x 64′, two-st'y mansard; Charles H. Wetmore, builder.

Washington St., rear, near Newton Line, for Joseph Davis, dwell., 14′ and 20′ x 21′ and 33′, two-st'y pitch; McNeil Bros., builders.

Washington St., near Albano St., Ward 23, for John Brown, dwell., 16′ and 20′ x 21′ and 30′, two-st'y pitch; John B. McKay, builder.

Erie Ave., opposite Merrill St., Ward 24, for Catherine E. Gigie, 2 dwells., 20′ x 25′, two-st'y flat; John H. Gigie, builder.

Maine St., Nos. 149 *and* 151, cor. Warren St. and Thompson Sq., Ward 5, for Maurice Hart, dwell. and store, 26′ and 31′ x 45′ and 56′, four-st'y flat; J. W. Burckes, builder.

Phipps St., No. 19, Ward 5, for E. D. Brooks, storage, 18′ x 50′, one-st'y flat; —— Harmon, builder.

Union Ave. No. 46, rear, near Green St., Ward 23, for Michael Maloney, stable, 22′ x 30′, one-st'y pitch; John B. McKay, builder.

Market St., near Faneuil St., Ward 25, for Edward Keenan, dwell., 22′ and 32′ x 35′, two-st'y pitch; Daniel M. O'Connell, builder.

Sawin Hill Ave., near Grampian Way, for Geo. E. Scott, stable, 22′ x 26′, one-st'y pitch; David A. Berry, builder.

Erie Ave., nearly opposite New Seaver St., Ward 24, for Wm. H. Wallace, 2 dwells., 20′ x 42′, three-flat; John H. Gigie, builder.

Dorchester St., No. 360, Ward 15, for Daniel Sands, dwell. and store, 33′ x 38′ and 16′ x 38′, two-st'y mansard; A. Crawford, builder.

Brooklyn.

BUILDING PERMITS. — *Park Ave., Nos.* 700 *to* 708, n s, 125′ w Tompkins Ave., 5 three-st'y frame double tenements, tin roofs; cost, each, $4,000; owner, Andrew Froelich, 202 Stockton St.; architect, T. Engelhardt; builders, A. Sachs and H. Loeffler.

Marcy Ave., s e cor. Monroe St.; also, *Marcy Ave.*, n e cor. Madison St., 2 three st'y brownstone front stores and tenements, tin roofs; cost, about $7,000 each; owner, architect and builder, F. C. Vrooman, 444 Gates Ave.

St. James Pl., Nos. 84 *to* 94, w s, 50′ n Greene Ave., 6 three-st'y brick dwells., tin roofs; cost, each, $7,500; owner, Thomas T. Thorp, 379 Washington Avenue; architect, A. H. Thorp; builders, W. J. Reynolds & Son and Mills & Bush.

Evergreen Ave., w s, 50′ n Woodbine St., 3 two-st'y frame dwells., tin roofs; cost, each, $2,000; owner and architect, Jno. F. Ehlers, 94 Sumpter St.; builders, W. Welch and W. M. Whitenack.

Bedford Ave., e s, 42′ s Jefferson St., 3 four-st'y brownstone front flats, tin roofs; cost, total, $21,000; owner and builder, S. E. C. Russell; architect, I. D. Reynolds.

Dodworth St., s s, 156′ 4″ Broadway, two-st'y frame tenement, tin roof; cost, $3,000; owner and builder, Albert F. Fitch, 216 East Tenth St., New York City; architect, J. Herr.

Monroe St., n s, 100′ e Reid Ave., 2 two-st'y brownstone front dwells., tin roofs; cost, each, $3,500; owner, architect and builder, Geo. F. Chapman, 15 Kosciusko Pl.

Union St., n s, 293 w Seventh Ave., 2 four-st'y brownstone front tenements, gravel roofs; cost, each, $6,000; owner, Geo. M. Brown, 728 Fulton St.; builder, L. E. Brown.

North Seventh St., n s, about 150′ w First St., two-st'y brick storehouse, gravel roof; cost, $10,000; owners, Dick & Meyer, on premises; architect, E. F. Gaylor; mason, Jas. Rodwell; carpenter not selected.

Broadway, n e cor. Suydam St., three-st'y brick store and tenement, tin roof; cost, $8,000; owner, —— Aube, New York City; architect, T. Engelhardt; builder, F. Herr.

Court St., s w cor. Remsen St., two-st'y freestone front bank, roof of asphalt and slate; cost, $130,000; owner, Dime Savings Bank, 367 Fulton St.; architect, Mercein Thomas; builders, J. D. Anderson and Hartt & Boyd.

Eighteenth St., No. 491, n s, 100′ w Ninth Ave., three-st'y brick tenement, tin roof; cost, $3,700; owner, Ellen Kirwan, 493 Eighteenth St.; architect, W. Wirth; builders, J. Sharock and J. Van Syckle.

Hart St., s s, 100′ w Lewis Ave., two-st'y brick dwell., tin roof; cost, $3,500; owner, Mary Reilly, 1076 Lafayette Ave.; architect and builder, M. McCarty.

Ralph Ave., s w cor. Chauncey St., one-st'y frame chapel; cost, $10,000; owner, Central Congregational Society, E. H. Crampton, President Board of Trustees, Hancock St., near Franklin Ave.; architect, G. L. Moore.

Fifteenth St., No. 227, n s, 140′ e Fifth Ave., three-st'y frame tenement, tin roof; cost, $4,000; owner, Christian Stohr, 295 Thirteenth St.; architect and builder, Jos. Sealy.

St. John's Pl., s s, 100′ w Eighth Ave., 7 three-st'y brownstone front dwells., tin roofs; cost, each $9,000; owner, Henry Lansdell, Ninth St., cor. Fifth Ave.; architect, C. B. Sheldon.

State St., s s, 100′ n Smith St., four-st'y brick double tenement, tin roof; cost, $5,000; owner, Thos. Colson, 281 Atlantic Ave.

North Seventh St., n s, 150′ e Second St., four-st'y brick double tenement, tin roof; cost, $8,000; owner, Patrick Murray, 99 North Seventh St.; architect, E. F. Gaylor; builders, Matt Smith and Gilmore & Trevor.

Penn St., n s, about 150′ w Lee Ave., three-st'y brownstone front dwell., tin roof; cost, $10,000; owner, Andrew Brown, on premises; architect, E. F. Gaylor; builders, T. Gibbons and Gilmore & Trevor.

Boerum Pl., e s, 150′ n Dean St., four-st'y brick flat, gravel roof; cost, $8,000; owner and builder, Jno. Denithorne, Dean St., near Grand Ave.; architect, R. Dixon.

Freeman St., s s, 215′ e Oakland St., three-st'y frame dwell., tin roof; cost, $4,000; owner, Jos. Krekey, 362 Oakland St.; architect, J. Platte; builders, H. Grasman and J. Rueger.

Chicago.

HOUSES. — Messrs. Burnham & Root, architects, have plans for Mr. J. H. Dow for two-st'y brick house.

Same architects have plans for two houses for Mr. Robert Strahan.

Also, on Prairie Ave., near Twenty-sixth St., brick dwell., stone finish, for Mr. T. K. Burch.

CHURCH. — W. L. B. Jenney, architect, has plans ready for St. Paul Episcopal Church, at Riverside; cost, $10,000. Ground was broken 6th of June.

STORE. — Mr. Henry Sierks, architect, is building, for Samuel Johnson and Samuel Springer, three-st'y store and flat building, Nos. 475 and 477 Blue Island Ave., St. Louis pressed-brick, with stone finish; cost, $20,000.

FACTORY. — Mr. Henry Sierks, architect, is building a four-st'y factory, 50′ x 156′, brick, for the Northwestern Parlor Furniture Manufacturing Co.; cost, $18,000.

WAREHOUSE. — Mr. H. Sierks, architect, has plans for four-st'y brick warehouse, engine-room, and boiler-house, for Mr. H. Bartt; cost, $12,000.

BUILDING PERMITS. — Thos. Sutton, two-st'y dwell., 25′ x 60′, 234 Leavitt St.; cost, $5,500.

Mrs. Huber, 2 two-st'y store and dwell., 22′ x 55′, Cottage Grove Ave.; cost, $5,200.

Geo. A. Weiss, six-st'y brick malt-house and elevator, 100′ x 110′, Bloomingdale Ave.; cost, $100,000.

Schwarz & Keies, two-st'y flats, 61′ x 88′, 2942–2948 Grove St, and Park Ave.; cost, $8,000.

Wm. Noll, two-st'y basement dwell., 22′ x 45′, 2821 s s K Ave.; cost, $3,000.

F. Charat, two-st'y basement dwell., 20′ x 50′, 826 Allport St.; cost, $3,000.

J. V. Hawkins, three-st'y flats, 21′ x 71′, 184 Cass St.; cost, $14,000.

L. H. Sass, two-st'y and attic dwell. and barn, 22′ x 71′, 847 West Monroe St.; cost, $9,000.

Wm. Fleming, 4 two-st'y dwells., each 25′ x 70′, 178 South Morgan St.; cost, $20 000.

Hummer & Corliss, 2 two-st'y dwells., each 25′ x 60′, 343 and 345 Ashland Ave.; cost, $11,000.

E. Sarrfield, three-st'y brick flats, 24′ x 60′, 398 Garfield Ave.; cost, $6,000.

John Krueger, three-st'y basement dwell., 22′ x 72′, 7 Will St.; cost, $5,000.

E. Destifano, three-st'y basement store and dwell., 24′ x 100′, 416 South Clark St.; cost, $5,000.

A. C. Junet, 2 two-st'y basement dwells., 36′ x 41′, 643 South Wood St.; cost, $6,500.

Richard Knisely, three-st'y basement stores and flats; 35′ x 75′, 881 Lake St.; cost, $10,000.

H. Zimmerman, two st'y dwell., 21′ x 60′, 736 North Paulina St.; cost, $3,500.

Fred. Putzel, two-st'y basement dwell., 20′ x 50′, 560 Nineteenth St.; cost, $3,000.

G. M. E. Church, church, 32′ x 42′, Thirty-first St; cost, $3,500.

Aug. Schultz, two-st'y dwell. and store, 27′ x 60′, 3848 Cottage Grove Ave.; cost, $8,000.

S. V. A. Weaver, three-st'y flats, 20′ x 75′, 213 Illinois St.; cost, $8,000.

Meacham & Wright, two-st'y dwell., 25′ x 70′, 567 West Jackson St.; cost, $7,000.

Britten & Guth, 2 two st'y basement dwells., each 23′ x 58′, 3412 South Park Ave.; cost, $11,000.

Peter Adler, three-st'y brick flats, 24′ x 66′, 267 East Huron St.; cost, $8,000.

Cincinnati.

BUILDING PERMITS. — Adams Express Co., three-st'y brick building, n e cor. Seventh St. and Broadway; cost, $40,000.

Frank Walton, three-st'y frame building, n w cor. Harrison and Culvert Sts.; cost, $5,0 0.

Miss Mary Meyer, three-st'y brick building, 157 Dayton St.; cost, $8,0 0.

Adam Smith, two-and-a-half-st'y brick building, Freeman Ave.; cost, $5,000.

Est. Jas. W. Gaff, four-st'y stone front building, cor. Plum and Perry Sts.; cost, $14,0 0.

A. S. Ludlow, 2 two-st'y frame buildings, Fairmount St.; cost, $5,000.

Miss Mary Weyholl, three-st'y brick building, Sycamore st.; cost, $3,000.

A. C. Barney, four-st'y brick building, Backer St.; cost, $8,000.

Permits for repairs; cost, $13,025.

Grand Rapids, Mich.

PROSPECTS. — The work of building neat, cosy cottages and homes is booming in the Fifth Ward, and that section of the city is growing very rapidly, as well as all other parts of the city. Never before in the history of Grand Rapids has there been anything like the boom in the building of residences that there is now. It is fair to predict that fully twelve hundred new dwellings will be built here this season.

FACTORY. — The Gleason Wood Ornament Company has begun the erection of its new factory, 50′ x 80′, two stories high, of brick, besides its engine and boiler-house.

A brick addition to the Phœnix Furniture Factory.

HALL. — Mrs. Ball is building a hall for public purposes, which will seat one thousand persons, on Canal St.

HOTELS. — A hotel is being built near the D. G. H. & M. Junction, costing about $5,000.

Work has commenced on the new Eagle Hotel, costing, when completed, about $30,000.

HOUSES. — Mr. F. P. Gilbert is preparing to build a frame house on College Ave.; cost, about $6,000.

Conductor Moran, of the G. P. & I. R. R., is about to build a new house on Lagrave St., to cost about $3,000.

Conductor Flaherty, of the G. R. & I. R. R., is preparing to build a frame house on South Division St.; cost, $2,000.

Henry Carr is building a house on cor. of Lafayette and Washington Sts.; cost, about $4,000.

Geo. N. Munson is to build a cottage on Jefferson Ave., near Fulton St.; cost, $3,000.

Mr. Chas. P. Rathbun is building a cottage at the cor. of Washington st. and Madison Ave., costing $3,500.

Mr. Ransom Luce is building a cottage on the west cor. of Jefferson Ave.; cost, about $3,000.

Dr. Chas. Hazeltine is building a house on Cherry St.; cost, $3,500.

OPERA-HOUSE. — Very important changes are to be made this summer in Powers's Grand Opera-House.

STORES. — Messrs. Kromer & Sons are building a two-st'y block on Plainfield Ave., costing $5,000.

Messrs. Rathbun & Boorhem are building a new brick block on Waterloo St.; cost, $15,000.

Among the most expensive houses now in process of construction in this city, or soon to be, are the following: —

Wm. McMullen, cor. of Fountain St. and College Ave.; cost, $10,000.

C. Bertsch, cor. of Bronson and Lafayette Sts.; cost, $10,000.

Robert B. Woodcock, cor. Cherry and Sheldon Sts.; cost, $10,000.

Mrs. Alice Twamley, cor. Lafayette aad Washington Sts.; cost, $7,000.

Geo. H. White, Fountain St.; cost, $10,000.

TENEMENTS. — Mr. Julius Berkey is building a new tenement-house on Fountain St., costing $10,000.

New York.

BUILDING PERMITS. — *East One Hundred and Ninth St., No.* 317, dve-st'y brick tenement, tin roof; cost, $7,000; owner, Hugo Siller, One Hundred and Thirty-ninth St., near Third Ave.; architect, John Rogers.

Roosevelt St., Nos. 3, 5 *and* 7, five-st'y brick tenement and stores, tin roof; cost, $18,000; owners, William D. Foulke and ano., Richmond, Ind.; architects, D. & J. Jardine; builders, Peter Tostevin's Sons.

East One Hundred and Ninth St., Nos. 162, 164 *and* 166, 3 five-st'y brownstone front tenements, tin roofs; cost, each, $16,000; owner, Peter Cain, 209 East Twenty-ninth St.; architect, Joseph M. Dunn; done by days' work.

One Hundred and Forty-third St., n s, 558′ 4″ e Willis Ave., 5 two-st'y frame dwells., tin roofs; cost, each, $2,200; owner, Charles Van Riper, 683 East One Hundred and Forty-third St.; architect, H. S. Baker

Lexington Ave., n w cor. One Hundred and Seventeenth St., four-st'y brick tenement and store, tin roof; cost, $10,000; owner and builder, John W. Warner, One Hundred and Sixth St., cor. Fifth Ave.; architect, Wm. Graul.

Lexington Ave., w s, 20′ n One Hundred and Seventeenth St., four-st'y brick tenement, tin roof; cost, $9,000; owner, builder and architect, same as last.

Lexington Ave., w s, 39′ n One Hundred and Seventeenth St., four-st'y brick tenement, tin roof; cost, $11,000; owner, builder and architect, same as last.

Lexington Ave., w s, 64′ n One Hundred and Seventeenth St., four-st'y brick factory, tin roof; cost, $4,800; owner, builder and architect, same as last.

Fifteenth St., s s, 75′ w Seventh Ave., four-st'y brick tenement and store, tin roof; cost, $7,500; owner, John Rushmeyer, s w cor. Fifteenth St. and Seventh Ave.; architect, Wm. Jose.

West Fifty-fifth St., Nos. 140, 142, 144 *and* 146, three-st'y brick building for studios, apartments, and stable, tin and slate roof; cost, $50,000; owner, A. H. Barney, 82 Broadway; architect, Bassett Jones; builder, L. N. Crow.

Mott Ave., No. 395, 2 two-st'y frame buildings, factory and boiler-house, shingle and tin roofs; cost, total, $3,500; owner, C. J. Brordbach, on premises.

Eighth Ave., n e cor. One Hundred and Twenty-fourth St., 5 five-st'y brick flats and stores; cost, total, $85,000; owner, Alva S. Walker, 43 West One Hundred and Thirtieth St.; architect, Thos. E. Thomson.

West Twentieth St., No. 227, five-st'y brick tenement, tin roof; cost, $10,000; owner and builder, Wm. S. Wright, 36 West Twenty-seventh St.

Sixty-eighth and Sixty-ninth Sts., Lexington and Third Aves., interior court of Foundling Asylum, one-st'y and basement brick chapel, slate and galvanized-iron roof; owners, Sisters of Charity, on premises; architect, Wm. Schickel; builders, Terence Kiernan and John Downey.

Broadway, Nos. 876 *and* 878, six-st'y brick store, slate and tin roof; cost, $55,000; owner, David S. Hess, 35 West Twenty-third St.; architect, Henry Fernbach; builders, Alex. Brown, Jr., and J. J. Brown.

Eighty-ninth St., n s, 133′ 4″ e Fourth Ave., 2 five-st'y brick tenements, tin roofs; cost, each, $20,000; owner, Ellen Broas, Haverstraw, New York; architects, Cleverdon & Putzel.

Worth St., No. 143, seven-st'y brick store, tin roof; cost, $34,000; owner, Andrew Dougherty, 80 Centre St.; architect, Geo. T. Powell; builders, Jas. T. Stevenson and Martin Barry.

Second Ave., w s, 100′ 11″ s One Hundred and Twenty-second St., three-st'y brick tenements and stores, tin roof; cost, $20,000; owner, Philip Doran, 365 Pleasant Ave.; architect, J. C. Babcock; builder, I. Lyon.

West Fiftieth St., Nos. 409 *and* 411, 2 five-st'y brownstone front tenements, tin roofs; cost, each, $12,000; owner, John Fresch, 407 West Fiftieth St.; architect, Wm. Graul.

East Fortieth St., No. 332, five-st'y brick tenement, tin roof; cost, $13,000; owner, Joel B. Smith, 954 East One Hundred and Thirty-eighth St.; architect and builder, Frank E. Smith.

West Sixteenth St., No. 313, five-st'y brick tenement, tin roof; cost, $8,000; owner and builder, same as last.

Canal St., No. 274, four-st'y brick store, tin roof; cost, $12,000; owners, Emma D. Van Vleck and Helen D. Adams, extrxs., 110 East Seventy-eighth St.; architect, A. B. Ogden.

ALTERATIONS. — *State St., No.* 6, raise attic to full story, new flat roof, and two-st'y brick extension; also, interior alterations; cost, $15,000; owner, Jos. F. Chatelier, 116 East Sixteenth St.; architect, A. B. Ogden; builders, D. & E. Herbert.

Fifth Ave., No. 434, alter basement front; cost, $3,000; owner, J. N. Burton, Newburg, N. Y.; architects, D. & J. Jardine.

Madison Ave., No. 93, five-st'y brick extension; cost, $10,000; owner, Thos. A. Emmett, M. D., on premises; architect, Chas. R. Jackson.

Philadelphia.

BUILDING PERMITS. — *Poplar St.*, n s, 65′ e Sixteenth St., 2 three-st'y dwells., 16′ x 65′; Jno. K. McCurdy.

Twenty-first St., n w cor. Berks St., 10 three-st'y dwells., 16′ x 48′; J. L. Carre, owner.

Hancock St., No. 2528, two-st'y dwell., 18′ x 48; Daniel Nevling, contractor.

Smedley St., above Thirty-sixth St., two-st'y stable, 24′ x 48′; Firman Bros., contractors.

Washington St., n w Fountain St., three-st'y dwell., 18′ x 34′; Mrs. C. L. Soberheiner, owner.

James St., n e Bridge St., three-st'y dwell., 16′ x 46′; J. S. Taylor, contractor.

Ashton St., near Penn St., 2 two-st'y dwells., 18′ x 34′ and 17′ x 47′ C. C. Linahan, contractor.

Garnet St., near Lehigh Ave., two-st'y dwell., 30′ x 30′; C. S. Quigley & Co.

North Twentieth St., No. 1416, three-st'y dwell., 16′ x 41′; Henry Moore, owner.

Gowan Ave., n s, and Chestnut Hill Railroad, three-st'y dwell., 32′ x 47′; Tourison Bros. contractors.

Gowan Ave., s s, and Chestnut Hill Railroad, 2 three-st'y dwells., 38′ x 40′; Tourison Bros., contractors.

Pine St., n e cor. Franklin St., 4 two-st'y dwells., one with store, 16′ x 38′; Adam Mann, owner.

Hull St., n e cor. Amber St., 6 two-st'y dwells., 15′ x 40′; McCutcheon Bros.

Somerset St., s e cor. Reese St., three-st'y store and 5 two-st'y dwells., 18′ x 57′, and 14′ x 44′; Daniel Nevling, contractor.

Islington Lane, w s, bet. Berks St. and Montgomery Ave., 18 two-st'y dwells., 15′ x 47′; Jas. Caven, owner.

Main St., s w s, and School Lane, Saving Fund building, 35′ x 64′; J. C. Caldwell, contractor.

Cottage Lane, bet. Clarkson Ave. and Thorp's Lane three-st'y dwell., 38′ x 57′; J. C. Caldwell, contractor.

Mount Vernon St., e s, n Division St., 4 three-st'y dwells., 17′ x 33′; James Hinchliff.

Jefferson St., s e cor. Hamilton St., two-st'y dwell., 17′ x 50′; A. A. Harmer, contractor.

Tenth St., s w cor. Wallace St., two-st'y church building, 50′ x 120′; Geo. F. Payne & Co., contractors.

Philip St., No. 2325, two-st'y dwell., 18′ x 30′; Chas. Walls, owner.

South St., No. 1210, three-st'y store and dwell., 21′ x 62′; Grubb Bros., contractors.

Seventeenth St., s w cor. Tasker St., two-st'y store and dwell., 15′ x 44′; Wm. Galbraith, contractor.

Ripka Ave., n s, w Washington St., three-st'y dwell., 17′ x 32′; W. R. Davis, contractor.

Wellington St., s w cor. Montgomery Ave., 5 three-st'y dwells., 15′ x 50′; Thos. McCouch, contractor.

Moll St., w s, bet. Wharton and Reed Sts., 10 two-st'y dwells., 15′ x 36′; D. Garrison, owner.

Washington St., n e cor. Ripka Ave., three-st'y dwell., 20′ x 47′; W. Goodfellow, contractor.

Jefferson St., cor. Division St., two-st'y dwell., 20′ x 44′; W. Goodfellow, contractor.

Spring Garden St., s Green Lane, two-st'y dwell., 14′ x 36′; W. Goodfellow, contractor.

Broad St., s s, e Pechin St., two-st'y dwell., 20′ x 55′; W. Goodfellow, contractor.

Fifth St., e s, n Cumberland St., three-st'y dwell., 16′ x 45′; Samuel Mills, owner.

Church St., n e s, w Trenton Railroad, 2 three-st'y dwells., 20′ x 60′; Jas. McCartney, contractor.

Coral St., w s, s Dauphin St., two-st'y dwell., 14′ x 42′; Harry Brocklehurst, contractor.

Twenty-third St., s e cor. Cherry St., one-st'y shop, 25′ x 60′; Samuel Hart, contractor.

Fifth St., e s, s Huntingdon St., two-st'y dwell., 14′ x 42′; Frederick Lambrecht.

Oxford St., s s, w Twenty-fifth St., 7 three-st'y dwells., 15′ x 52′; J. L. Carre, owner.

South side P. & N. R. R., above Wissahickon St., three-st'y dwell., 21′ x 44′; W. H. H. Lawson.

Spruce St., s e cor. Bradford St., three-st'y dwell., 22′ x 75′; Jno. McClellan, contractor.

Woodland St., n s, w Thirty-second St., 3 three-st'y dwells., 16′ x 58′; Pennock Bros., contractors.

Lancaster Ave., s s, w Thirty-second St., 3 three-st'y dwells., 15′ x 42′; Pennock Bros. contractors.

Belgarde St., w s, n Capewell St., two-st'y dwell., 17′ x 40′; J. H. Baldt, owner.

C St., No. 2807, two-st'y dwell., 15′ x 40′; D. C. Schuler, contractor.

Eighth St., e s, n Columbia Ave., four-st'y dwell., 17′ x 72′; J. Culbertsom, contractor.

Mascher St., s e s, n Somerset St., two-st'y dwell., 18′ x 40′; P. A. Gerhardt, contractor.

Somerset St., s s, e Mascher St., two-st'y dwell., 16′ x 22′; P. A. Gerhardt, contractor.

Sixtieth St., cor. Hazel St., two-st'y dwell., 16′ x 44′; Harry Petit.

Twenty-seventh St., s e cor. Dauphin St., two-st'y factory, 45′ x 77′; G. H. Fretz, contractor.

Norris St., s w cor. Belrgade St., 4 two-st'y dwells., one with store, 15′ x 47′; Duryea & Childs.

Franklin St., e s, n Church St., one-st'y office 26′ x 30′, and cylinder-room, 26′ x 50′; Wm. Reas, contractor.

Main St., n e cor. Pleasant St., 2 two-st'y dwells., 16′ x 40′; Tourison Bros. contractors.

Sixty-fourth St., e s, s Haverford St., two-st'y dwell. and stable, 18′ x 42′ and 24′ x 24′; Jas. Barlow, owner.

North Ninth St., No. 19, four-st'y store, 20′ x 70′; F. Brill, owner.

Gray's Ferry Road, w Forty-eighth St., three-st'y dwell., 17′ x 34′; Isaac Wood & Murray, contractors.

Chestnut St., n s, w Thirty-second St., three-st'y dwell., 18′ x 60′; Reuben Yarnall, owner.

Carnarvon St., e s, bet. Dickinson and Tasker Sts., 14 two-st'y dwells., 14′ x 28′; Jno. White, contractor.

Palethorp St., No. 1331, three-st'y dwell., 14′ x 30′; D. C. Schuler, contractor.

Marston St., No. 2102, two-st'y dwell., 18′ x 30′; Rudolph Sindel, contractor.

Portland, Oregon.

HOTELS. — Mr. Schade is putting up a hotel-building; cost, $7,000.

Dr. Wilson is having plans prepared for a three-st'y brick building, 100′ x 100′, with one hundred and thirty rooms, for hotel purposes; probable cost, $35,000.

HOUSES. — John Gates is having a two-st'y house built; cost, $6,500; R. G. Combs, contractor.

Dr. G. Kellogg is building a two-st'y house; day work; W. A. Cordell, Superintendent.

Wm. Sweeney is having built 5 five-roomed cottages, for rent, which will cost $8,000; R. Robertson, contractor. He also intends putting up a two-st'y house, costing $5,000.

E. W. Burden is building a two-st'y house for Charles Hartness; cost, $2,300.

Messrs. Merchant & Bridges are putting up a house for George Houghton; cost, $6,000.

Thos. Stephens has let the contract for a cottage to Sedge & Jenkins, for $2,200.

B. F. Campbell has just been awarded the contract for a house for Mrs. Hawthorne, at $4,680.

STORE. — Plans are being prepared by W. H. Williams for a three-st'y brick store for P. B. Sinnott, 50′ x 95′; cost, about $30,000.

John Maher is building a store, with residence above; cost, $2,500.

STABLE. — W. S. Ladd is putting up a fine stable; day's work; M. Merrill, Superintendent; cost, about $12,000.

St. Louis.

BUILDING PERMITS. — Fifty-eight permits have been issued since our last report, of which nineteen are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows: —

Christ. Heinz, 2 adjacent two-st'y brick dwells.; cost, $7,000; Beinke, architect; J. Fischer, contractor.

Jno. McDermott, two-st'y brick tenement; cost, $3,000; Brady, architect; G. Neumeister, contractor.

Carondelet Ave. Furniture Manufacturing Co., two-st'y brick Furniture Manufactory; cost, $6,000; Klute & Hillebrandt, contractors.

W. L. Fitzgerald, two-st'y brick dwell.; cost, $4,000; Brady, architect; J. H. Frye, contractor.

Harry S. Voellinecke, two-st'y brick dwell.; cost, $2,500; Pipe, architect; J. B. Asper, contractor.

H. J. Powers, two-st'y brick store-house; cost, $3,000; sub-let.

Mrs. Mary L. Knower, 3 adjacent two-st'y brick dwells.; cost, $8,000; C. K. Ramsey, architect; E. T. Hoffmann, contractor.

J. T. Cole, two-st'y brick dwell.; cost, $2,500; J. V. Majors, contractor.

South St. Louis R. W. Co., three-st'y car-works; cost, $6,150; Helm Bros., contractors.

McPheeters Warehouse Co., one-st'y iron-clad warehouse; cost, $3,500; Renick, architect; R. P. McClure, contractor.

A. L. Paul, 2 adjacent two-st'y brick dwells.; cost, $10,000; J. A. Conlon, contractor.

P. Neun, 4 adjacent two-st'y brick dwells.; cost, $14,000; Janssen, architect; Beckmeier & Riethmann, contractors.

B. Israel, 4 adjacent two-st'y brick dwells.; cost, $10,000; May, architect; Wm. Herkenhoff & Bro., contractors.

F. Grafmann, one-st'y brick dwell.; cost, $3,100; May, architect; Wm. Herkenhoff & Bro., contractors.

P. Stemmler, two-st'y brick dwell.; cost, $2,900; C. F. May, architect; Jaeger, contractor.

C. Kahn, two-st'y brick dwell.; cost, $5,300; W. C. Popp, contractor.

Washington.

DURING the month of May permits were issued for 123 new buildings, 166 repairs, 100½ feet of vault and 15 awnings. The receipts from permits were $628.

BUILDING PERMITS. — Two-st'y brick dwell., 18′ x 56′; on R St. bet. Twelfth and Thirteenth Sts., n w, for Fred Stultz; cost, $3,400.

Four-st'y brick warehouse, 54′ x 120′, cor. Second and B Sts., n w, for G. W. Knox; cost, $15,000; S. T. G. Morsell, architect.

Three-st'y brick dwell., on Fifteenth St., bet I and K Sts., n w, for Jas. Wormley; cost, $15,000; J. G. Myers, architect; S. P. Philips, builder.